PHOTOFACT* FOLDER SET

*TRADE MARK

NO. 128

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The PHOTOFACT Servicer

March 27, 1951 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ Volume 13 Nos. 127 & 128

NEW ASSOCIATION!

The National Electronic & Service Dealers Associations, a new organization representing associations of servicing technicians and dealers, was formed in Washington, D. C., on January 28th.

It is said that the aims of the organization are:

1. To improve the servicing industry.

2. To promote the welfare of dealers and technicians.

3. To promote a better understanding between service technicians and the electronic industry.

4. To promote better relations with the public.

5. To provide educational facilities.

6. To raise the standards of the servicing profession.

7. To cooperate with federal, state, and municipal agencies.

Temporary elected officers are: President, Max Leibowitz, N. Y. C.; Vice President, Norman R. Selinger, Washington, D. C.; Corresponding Secretary, Richard R. Devaney, Philadelphia, Pa.; Recording Secretary, Roger K. Haines, Haddonfield, N. J.; Treasurer, Vance E. Beachley, Harrisburg, Pa. Samual L. Marshall, N. Y. C., was appointed chairman of the Inter-relations and Publicity Committees; James L. Burns, Washington, D. C., chairman of the Membership Committee; and Frederick J. Schmidt, Steelton, Pa., chairman of the Steering Committee.

The address of the association is Dorchester House, 1625 Kalorama Road, N. W., Washington, D. C.

* * *

"A PLAN TO FACILITATE THE ACQUISITION OF CRITICAL RAW MATERIALS BY MANUFACTURERS FOR USE IN THE PRODUCTION OF MAINTENANCE, REPAIR AND OPERATING SUPPLIES TO KEEP EXISTING ELECTRONIC EQUIPMENT IN GOOD WORKING ORDER"

The following resolution was the result of a meeting of committees of two associations, following informal discussions with the Director of the electronic products division of NPA; and the Deputy director, and office of civilian requirements.

The resolution recommends that distributors who purchase MRO supplies (maintenance, repair and operating supplies) from a manufacturer shall be restricted to a 180 day inventory; that distributors sell such MRO supplies only to customers who certify in writing that the material will be used for repair and replacement; that such material will not increase the distributors' inventories in excess of the restrictions placed upon them; and setting up a manufacturer's priority rating on such purchase orders.

The resolution follows:

A resolution concerning the acquisition of raw materials for the manufacture of maintenance, repair and operating supplies for electronic equipment.

WHEREAS:

1. The undersigned have met informally as a group representing trade associations having a membership of over 200 manufacturers of electronic parts and equipment.

2. Consideration has been given to the necessity and desirability of maintaining in good working order and repair the various types of electronic equipment now in use.

3. Such a program is essential in the national defense program and vital to the public interest because it is used by:

(a) The Armed Forces for signal, communication and navigation equipment and for fire control and other military uses;

(b) Government agencies and departments for monitoring, testing, communicating, policing and other governmental functions;

(c) State and local governments for sundry municipal purposes;

(d) Laboratories for testing; research, development and experimental uses;

(e) Schools for education, development, instruction, research and similar academic projects;

(f) Fire, police, health and public welfare agencies for the maintenance of good order and the health and well being of the community;

(g) Common carriers for the conduct of vital transportation functions;

(h) Public utilities for developing and furnishing power, light and heat;

(i) Broadcasting and telecasting stations for the dissemination of news and entertainment and for cooperation in the Civilian Defense effort;

(j) Radio amateurs for the maintenance of a network vital to civilian defense;

(k) Civilian defense agencies, which require the use of home and automobile radio and home television receivers for the dissemination of news, information and instruction in the event of dire or national emergency;

(l) Manufacturers of military equipment and components therefor who require test instruments and electronic operating supplies to fabricate their products;

4. Existing government orders, regulations, and requirements have curtailed the availability and use of critical raw materials in the manufacture of new electronic equipment, thereby putting a greater burden on such equipment presently in use. This existing equipment will continue to deteriorate and cease to function unless kept in good working order and repair.

5. Some governmental regulations have already recognized the desirability and necessity of keeping such equipment in operation, by permitting a greater use of critical raw materials for the manufacture of maintenance, repair and operating supplies than is permitted for the manufacture of new equipment. However, no regulations have been promulgated by which manufacturers of such maintenance, repair and operating supplies can acquire the critical, functional raw materials necessary for the fabrication thereof.

6. The amount of critical raw materials required to produce such maintenance, repair and operating supplies is infinitesimal in relation to the entire consumption by industry of such critical raw materials. Yet the use of such negligible quantities could result in keeping in good working order and repair millions of dollars of vital electronic equipment necessary for the National defense and the public welfare.

7. This group desires to, and does hereby, present to the Electronics Products Division of National Production Authority a plan to facilitate the acquisition of critical raw materials by manufacturers for use in the production of maintenance, repair and operating supplies designed to keep existing electronic equipment in good working order and repair.

8. It is requested that this plan be considered by National Production Authority promptly and that action be taken forthwith to promulgate a regulation substantially in accordance with its terms.

Now, Therefore, be it Resolved that the following program called "Electronic Equipment MRO (Maintenance, Repair and Operating Supplies)" is hereby submitted for consideration:

(A) The program shall cover equipment which requires the use of electron tubes for its operation and is used for any of the purposes outlined in paragraph 3 of this presentation.

(B) It shall be limited to maintenance, repair and operating supplies for such equipment.

(C) It shall be related to a base period of six months ending June 30, 1950.

(D) Distributors who purchase MRO supplies from a manufacturer thereof shall be restricted to a 180 day inventory based upon their experiences during the base period.

(E) Distributors may sell such MRO supplies only to customers who certify in writing that they will be used for repair and replacement.

(F) Distributors may purchase MRO supplies from a manufacturer thereof upon certifying in writing that they will be sold only for repair and replacement and that receipt thereof will not place their inventory in excess of the restrictions specified in this plan.

(G) Distributors may be required to certify that they have received the replaced part for salvage at the time they sell a new MRO supply or they may be required to forward such part to such place as may be designated by National Production Authority.

(H) Manufacturers of MRO supplies may assign a priority rating (to be established) on all purchase orders for the acquisition of raw materials, parts or components needed by them for the manufacture of MRO supplies; provided, however, that in no six month period shall such ratings be used to acquire more material than 150% of what was used by that manufacturer for the same purposes during the base period.

(I) The priority rating so assigned shall be on a parity with and governed by the same regulations pertaining to DO ratings as prescribed in NPA Regulation 2.

* * *

CORRECTION NOTE:

REELEST Model C1A
Photofact Set No. 123, Folder No. 13

Next to the last paragraph, page 7, starting with "An AC Vacuum Tube Volt Meter," - - This paragraph should be preceded by the heading,

"Bias and Erase Voltage Adjustment."

* * *

Fred Oberlea, in the January issue of the Associated Radio Dealers' News, Columbus, Ohio, offers the following as an answer to many TV Antenna problems where substitute TV aerials have to be used instead of the outside one.

For channel No. 3, cut to the length of 7' 4-7/8" a piece of twin 300 ohm line; for channel No. 6 cut to 5' 6", and for No. 10 cut to 2' 4-7/8". This will make three lengths of lead. Tack each one to the back of the cabinet, one over the other. Connect each cut length to a 2 pole, three position wafer stitch. This will allow any one of the three channels to be connected to the input of the TV receiver. Fred reports much better results with this arrangement than is usually obtained with the "butterfly" or "rabbit ear" type, and in every case - less ghosts.

Thanks, Fred.

Here's a contribution well worth the $5.00 we offer for new ideas on "How to use PHOTOFACTS."

"When we sell a new radio or television receiver we perform the following:

1. We make the following notation of the set sold by applying a sticker to the cabinet or to the chassis:

Date Sold_____
Make and Model No._____
Service Information Can Be Found in
Photofact Set No. _____ Folder No._____

This we find, speeds up the repair of each set when trouble occurs, and if a serviceman doesn't have the Photofact Index or Photofact Folders he will immediately try to acquire them.

2. For each Television Set we note in the Photofact Folder the aerial best suited for it for different locations. When an antenna is installed we keep a record of it in the set in question and this way we can easily compare it for another installation at a different location. It prevents a lot of trouble and saves time."

Donat A. Duquet Repair Shop
10 Monument Street
Winslow, Maine

* * *

FIELD EXPERIENCES

For every "Field Experience" published, we issue a certificate good for one PHOTOFACT Folder Set. Awards are issued at the time of publication. Since it is impossible to verify the accuracy of contributions, we cannot be responsible for either the diagnosis made of the receiver trouble, or the results which will be obtained by following the suggested repair routine. All contributions become the property of Howard W. Sams & Co., Inc.

DUMONT Models RA112A and RA113A
Photofact Set No. 119, Folder No. 5

Complaint: Tuning unit jamming on several spots.

Analysis: Do not force, but take dial gears apart, wash with cleaning fluid and lubricate with lubriplate. Metal chips from the mounting screw that is used with a lockwasher to mount the chassis board to the cabinet have repeatedly caused such a condition, having dropped into the tuner gears right underneath.

DUMONT Models RA112A and RA113A
Photofact Set No. 119, Folder No. 5

Complaint: Horizontal oscillator will not snap in at correct frequency. When set is first turned on a loud squealing is audible.

Remedy: Put scope on the horizontal oscillator coil. The easiest way is to just clip on R93, the 8200 ohm resistor that is accessible between the lugs. There will be sufficient capacity to give a pattern on the scope and the circuit will not be disturbed. Put a signal on the set and have the hold control on the front about mid-range. Loosen the B4 lock-in trimmer to a medium position. Now adjust the slug at the bottom of the coil so that the picture locks in and then adjust the top slug to correct waveshape as indicated in Figure 11. Going back and forth between these two slugs and between the lock-in trimmer, if necessary always maintaining a locked-in picture and a correct waveshape until no further improvement is possible, will eliminate the squealing and wild oscillation, provided it is not due to a bad 6SN7. Let the set cool off completely and try again. In nine cases out of ten this procedure has cured the trouble.

Editor's Note: Both above Field Experiences were submitted by:

Paul Boller
1320 Lamar Drive
Springfield, Ohio

* * *

MOTOROLA Model 16T1, Chassis TS-60
Photofact Set No. 102, Folder No. 8

Complaint: Horizontal would not sync except in one position, a horizontally split picture.

Analysis: Resistor R83, in feedback circuit to horizontal AFC tube, was open. Replace.

BENDIX Model 235M1
Photofact Set No. 69, Folder No. 4

Complaint: Vertical hold was very unstable. Horizontal was steady except on strong noise pulses.

Cause and Remedy: Resistors R75, R76, and R129 in sync clipper plate circuit had changed to a much lower value. Replace with higher wattage units.

BENDIX Model 235M1
Photofact Set No. 69, Folder No. 4

Complaint: Strong 60 cycle hum on all channels in sound, disappearing when volume was turned down.

Analysis: 6J6, local oscillator, was gassy. This has been found in 3 different sets of this type. Replace.

Editor's Note: All three above Field Experiences were submitted by:

M. McGrath
Radio & Television Service
Gallupville, New York

* * *

SYLVANIA TV Model 1-125
Photofact Set No. 92, Folder No. 8

Complaint: Sound, but no picture (screen not lighted). Customer complained of turning on, and after set was on for about fifteen minutes or half an hour, the picture would go out, but sound was still there. He would turn off set for awhile and then turn it back on and picture would come on again for one or two hours and then go out again.

Analysis: Checked all components in connection with picture circuit. Everything checked good. Tried new 1B3 tube, video, output, horizontal oscillator

tubes, etc. Still no luck. Took cover off H. V. oscillator transformer box and went over coils of part T7. Noticed a very slight spark between 1st and 2nd coils. Turned off lights above work bench and ceiling and spark was noticeable in dark intermittently.

Remedy: Turned off set. Used wood probe and moved thin wire from which insulation had come off and which was lying across coil shorting turns. Coated wire and coil with dope and after it dried, turned set on. Picture came in perfect. Set now working fine.

Jerome Vogel
Jerry's Radio Service
2004 Brownsville Road
Pittsburg 10, Penn.

* * *

AIR KING TV Model 16C1
Photofact Set No. 121, Folder No. 3

Complaint: Picture non-linear vertically when set first put into operation. This couldn't be cured with the linearity control. After a week or two of operation a foldover was evidenced at the bottom of the raster.

Remedy: Replacing the 12BH7, vertical oscillator and amplifier tube, cleared up the foldover but the picture was still non-linear as first evidenced. Upon removal of the chassis it was noticed that one of the lugs on the linearity control was touching the shell of the control, thereby grounding it. Bending it back to normal position cleared up the trouble.

ADMIRAL Chassis 20X1
Photofact Set No. 100, Folder No. 1

Complaint: No raster. Sound okay. Focus control charred.

Remedy: Upon examining the chassis, the focus control was burned out and the .25 amplifier fuse in the B+ line was also burned out. Replacing the fuse and control and checking the B+ line resistance to ground, indicated that it was low. Checking components in the B+ circuit, capacitor C70 was found to be shorted. This was a 400V unit. In order to prevent recurrence of this trouble, it was replaced with a 600V unit.

Editor's Note: Both above Field Experiences were submitted by:

Joseph A. Szot
434 Hoyt Street
Dunkirk, New York

* * *

GENERAL ELECTRIC TV Model 802
Photofact Set No. 91-A, Folder No. 7

Complaint: After set is in operation for about one hour it goes out of sync horizontally.

Cause and Remedy: After checking tubes and capacitors in the sync circuits, I checked the waveshape on my scope at the center tap of transformer T-19, while the set was operating normally. When the sync went out, the waveshape disappeared. I found there was no return to ground from that point. What made it more difficult to check was that when I would turn the set off to make resistance checks, everything would check normal and when I turned the set on again I would have to wait an hour until the trouble would appear again.

The trouble was finally located in the 5 ohm winding tap of the horizontal sweep transformer (T-25) which intermittently opened after the set heated up.

I replaced the transformer and the set worked perfectly again.

Irving Rothstein
Rothstein & Smith
33 North Main Street
Liberty, New York

* * *

GENERAL ELECTRIC Model 817
Photofact Set No. 78, Folder No. 7

Complaint: Picture size reduced vertically.

Analysis: Resistor R-79 had increased in value from 4.3 meg. to about 15 meg. Replace resistor with correct value.

Horace Westbrooks
117 West Solomon Street
Griffin, Georgia

* * *

GENERAL ELECTRIC Model 160
Photofact Set No. 56, Folder No. 12

Complaint: Loud buzzing sound, as if a vibrator were connected directly to the speaker.

Remedy: Checked filters and found them to be okay. After much checking through the circuit I pulled the battery out (2 volt wet cell), cleaned the female sockets in the battery case and the male plugs on the housing. Spread the plugs for better contact and reassembled. Set then operated normally.

Phillip A. Koehler
5345 Broad Street
Pittsburgh 24, Penn.

* * *

CROSLEY Models 9-403M, -2, 9-404M,
9-413B, -2, 9-414B, 9-420M, 9-424B
Photofact Set No. 79, Folder No. 4

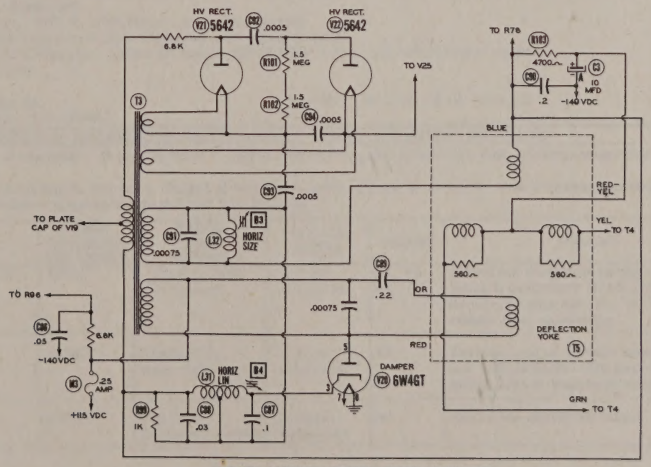
Complaint: No picture, no raster, good sound.

Analysis: Checking for high voltage showed high voltage supply was low, not sufficient anode voltage, to drive picture tube. Using Photofact circuit and voltage chart indicated horizontal oscillator was operating poorly. I discovered that part C75, 220 mmf., horizontal oscillator grid capacitor was leaky. Changing capacitor brought all voltages including high voltage to normal.

Thanks to Photofact, this repair was completed in very short order.

Arthur Chirkis
245 Dahill Road
Brooklyn 18, N. Y.

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 10 SET 120	
	The following production changes with change codes as noted have been made on Sylvania chassis 1-290.
C01	Code C01 changes are covered in Photofact Folder 10 Set 120.
C02	R69 changed to 1 meg. R75 changed to 1.2 meg.
C03	R106 changed to 180Ω. C45 changed to .005 MFD. C46 changed to .05 MFD. The cathode of V8 removed from -140VDC line and connected to the junction of R33 and R34. An audio socket was added to the chassis for use with phono adapter kit. A partial schematic on reverse side shows revised B- supply.
C04	This change does not affect field service.
C05	V14 and V15 tubes changed to type 6SN7GT.
C06	C62 disconnected from junction of R53, C56 etc., and returned to ground. C64 disconnected from junction of C2C and R58 and returned to ground. A .005MFD capacitor added in parallel with C105.
C07	The horizontal output and high voltage circuit was changed to eliminate filament isolation transformer T7. The horizontal output transformer T3 was changed to part # 241-0005. The deflection yoke changed to part # 100-0005. A partial schematic showing revised horizontal output and high voltage circuit is given below.



SCHEMATIC OF REVISED HORIZONTAL OUTPUT AND HV CIRCUIT

SYLVANIA MODELS 5130B, M, W, 5140B, M (Ch. 1-290)

Continued on reverse side.

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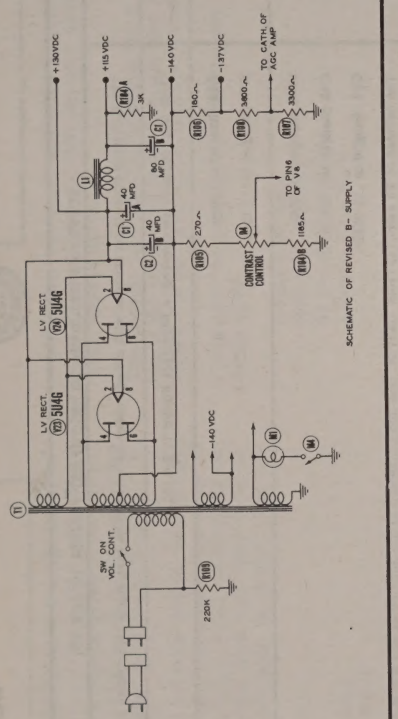
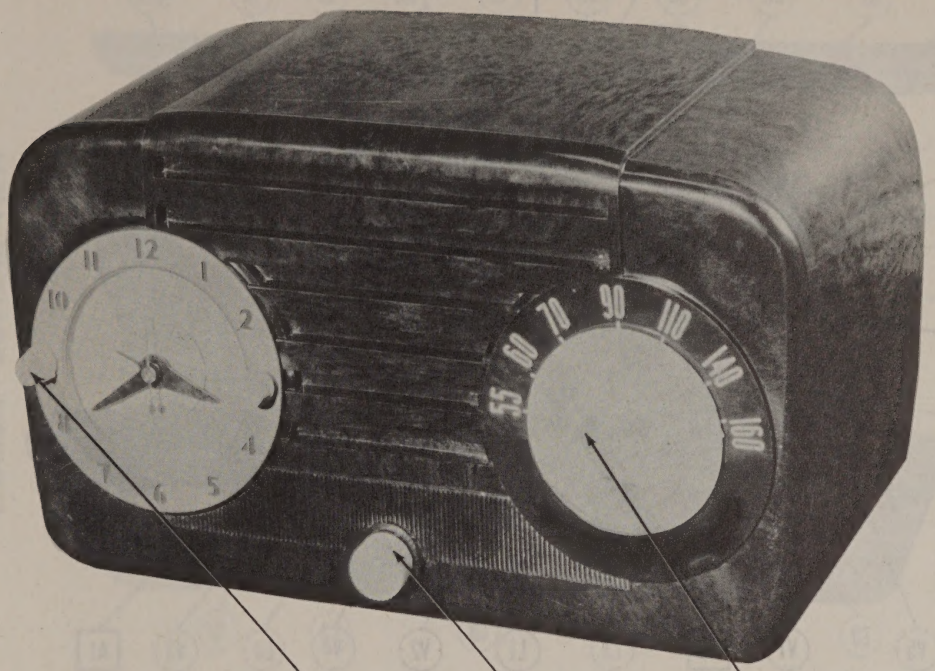
SYLVANIA MODELS 5130B, M, W, 5140B, M (Ch. 1-290) (Cont.)



SCHEMATIC OF REVISED B- SUPPLY



AIRCASTLE
MODEL 935

AIRCASTLE
MODEL 935

AIRCASTLE MODEL 935

TRADE NAME	Aircastle, Model 935
SUPPLIER	Spiegel, Inc., 1061 W. 35th Street, Chicago, Illinois
TYPE SET	AC operated Superheterodyne Receiver with electric clock
TUBES (FIVE)	Types 12BE6 Converter, 12BA6 IF Amp., 12AT6 DET.-AVC-AF, 50C5 Power output, 35W4 Rectifier
POWER SUPPLY	110-120 volts AC RATING .23 Amp. @ 117 volts AC
TUNING RANGE—BROADCAST	540-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1 MFD	High side to pin 7 (Grid) of 12BE6. Low side to B-.	455KC	Tunning Cap. fully open	Across voice coil	A1, A2 A3, A3	Adjust for maximum output. If isolation transformer is not used Reduce dummy ant. to .001 MFD to reduce hum modulation.
2.		Loop	1620KC	Tuning Cap. fully open	Across voice coil	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver, Adjust A5 for maximum output.
3.		Loop	1400KC	Tune for maximum output	Across voice coil	A6	Adjust for maximum output.

HOWARD W. SAMS & CO., INC. • Indianapolis Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		AIRCASTLE PART No.	STANDARD REPLACEMENT		
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amp.	12BA6	12BA6	7BK	
V3	Det.-AVC-AF	12AT6	12AT6	7BT	
V4	Power Output	50C5	50C5	7C5	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	AIRCASTLE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	40	150	31-15	PRS150/40-40		EDL4415		TVA-2445	Filter RED
B	40	150							Filter RED
C2	.05	400	32-5	P488-05	DF-503	PTE4S5		4TM-S5	Line Filter
C3	.2	300	32-32	P488-22		GT4P2		72P53	Line Isolation
C4	.01	400	32-1	P488-01	D6-103	PTE4S1	821-01	4TM-S1	Output Plate Bypass
C5	.01	400	32-29	P488-01	D6-103	PTE4S1	821-01	4TM-S1	Audio Coupling
C6	.005	400	32-20	P688-005	D6-502	PTE6D5	811-005	6TM-D5	Audio Coupling
C7	.05	200	32-4	P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C8	120	500	35-4	S1120	D6-121	5W5T15	GP2K-120	19C29	AF Plate Bypass
C9	120	500	35-4	S1120	D6-121	5W5T15	GP2K-120	19C29	RF Diode Filter

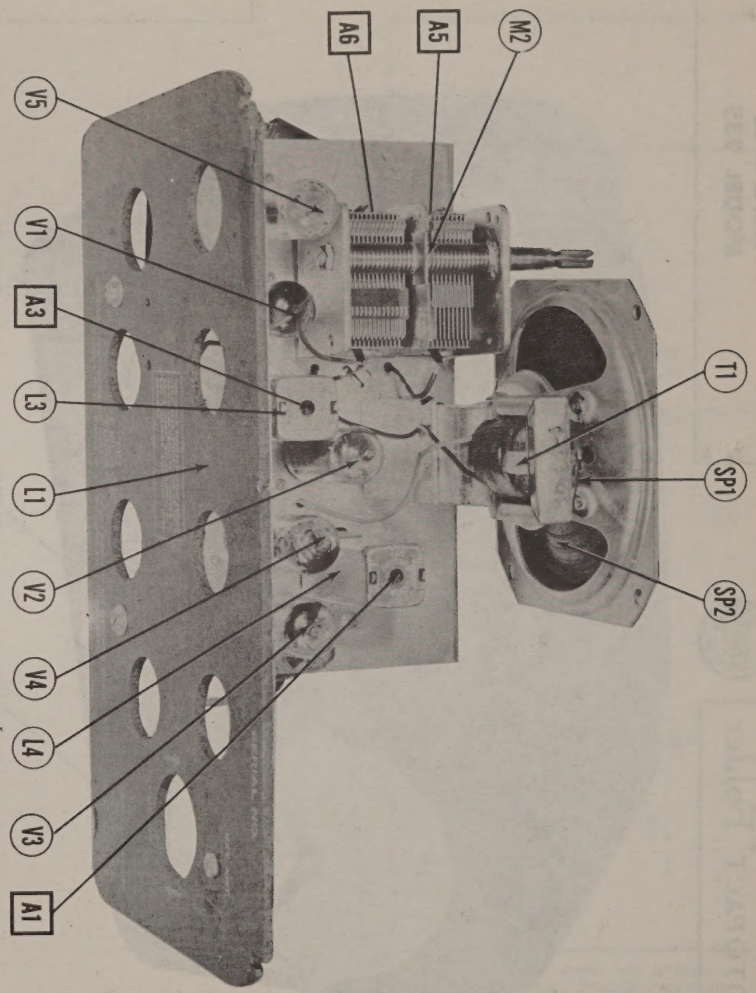
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESIST-ANCE	WATTS	AIRCASTLE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
R1A	500KΩ	½	50-15B	Q13-133	AG-60-Z	BSK-60	Volume Control
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req	Attach to R1A Per Instructions

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	AIRCASTLE PART No.	IRC PART No.	
R2	20KΩ	½	20-82		Osc. Grid
R3	150Ω	½	20-89	BTS-150	IF Amp. Cathode
R4	3Meg	½	20-56	BTS-3.3Meg	AVC Network
R5	10Meg	½	20-47	BTS-10Meg	AF Amp. Grid
R6	470KΩ	½	20-92	BTS-470K	AF Amp. Plate
R7	470KΩ	½	20-92	BTS-470K	Output Grid
R8	150Ω	½	20-81	BTS-150	Output Cathode
R9	1500Ω	1	20-73	BTA-1500	Filter
R10	22Ω	½	20-93		Rectifier Ballast

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		AIRCASTLE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	2000Ω	3.1Ω	170Ω	.3Ω		A-3332 ③	A-2928 ②	RO-2	② Bend mounting taps down, file out slots and mount on original bracket

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			AIRCASTLE PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V. C. IMP.		ST-113 ① Mod P4-X	4A07 ①	① Fabricate new mounting bracket
SP1	PM	3.1Ω				
	CONE DIA.	V. C. DIA.				
SP2	4"	9/16				

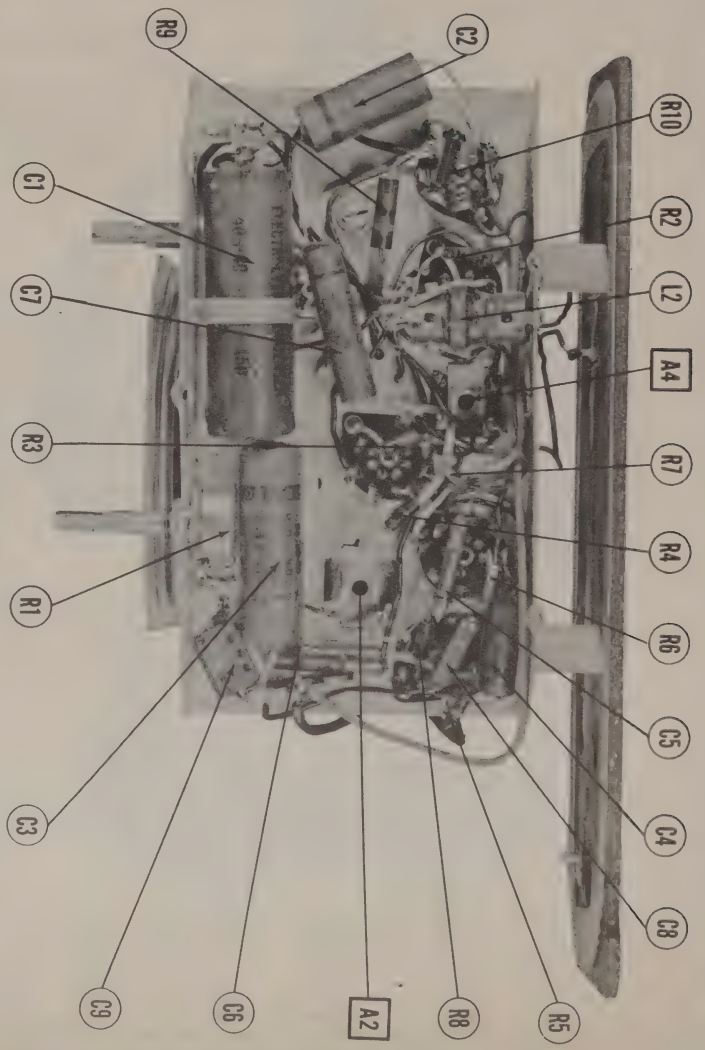
R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA	
		PRI.	SEC.	AIRCASTLE PART No.	MEISSNER PART No.
L1	Loop	1.8Ω			
L2	Osc. Coil	.5Ω	5Ω		
L3	1st IF	18Ω	18Ω		16-6678
L4	2nd IF	18Ω	18Ω		16-6678

MISCELLANEOUS

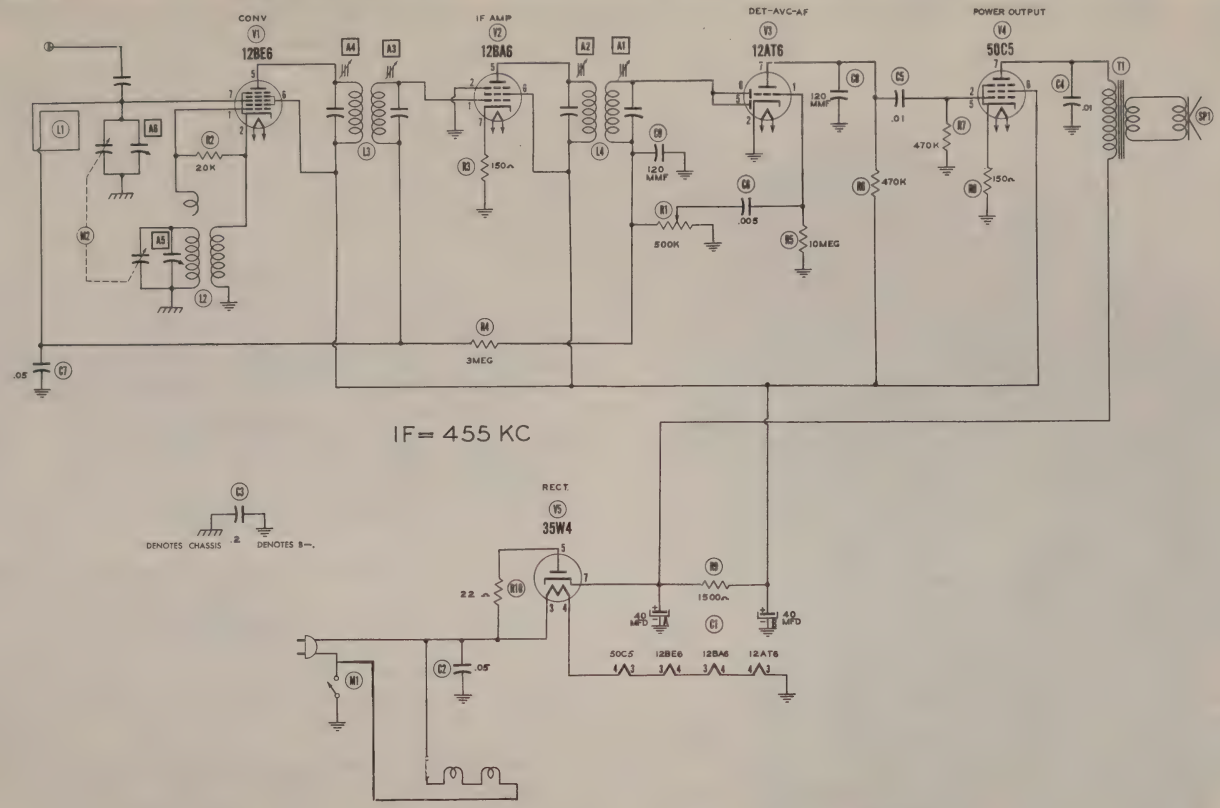
ITEM No.	PART NAME	AIRCASTLE PART No.	NOTES
M1	Switch		On - Off
M2	2 Gang Var. Cap.	30-15	(22-462MMF, 32-200MMF)

CHASSIS—BOTTOM VIEW



AIRCASTLE MODEL 935

AIRCASTLE MODEL 925



IF= 455 KC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	8-6.4VDC	0V	35VAC	24VAC	95VDC	95VDC	-.1VDC
V 2	12BA6	0V	0V	24VAC	12VAC	95VDC	95VDC	1.4VDC
V 3	12AT6	-.6VDC	0V	0V	12VAC	-.5VDC	.5VDC	45VDC
V 4	50C5	5.6VDC	0V	35VAC	80VAC	0V	95VDC	125VDC
V 5	35W4	117VAC	0V	117VAC	80VAC	114VAC	90VAC	130VDC

† TAKEN WITH VACUUM TUBE VOLTMETER

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	20KΩ	.5Ω	34Ω	23Ω	†1500Ω	†1500Ω	3.8Meg.
V 2	12BA6	3.8Meg.	0Ω	23Ω	12Ω	†1500Ω	†1500Ω	150Ω
V 3	12AT6	10Meg.	0Ω	0Ω	12Ω	500KΩ	500KΩ	470KΩ †
V 4	50C5	150Ω	470KΩ	34Ω	80Ω	470KΩ	†1500Ω	†170Ω
V 5	35W4	120Ω	Inf.	120Ω	80Ω	140Ω	88Ω	120KΩ

† MEASURED FROM PIN 7 OF V5

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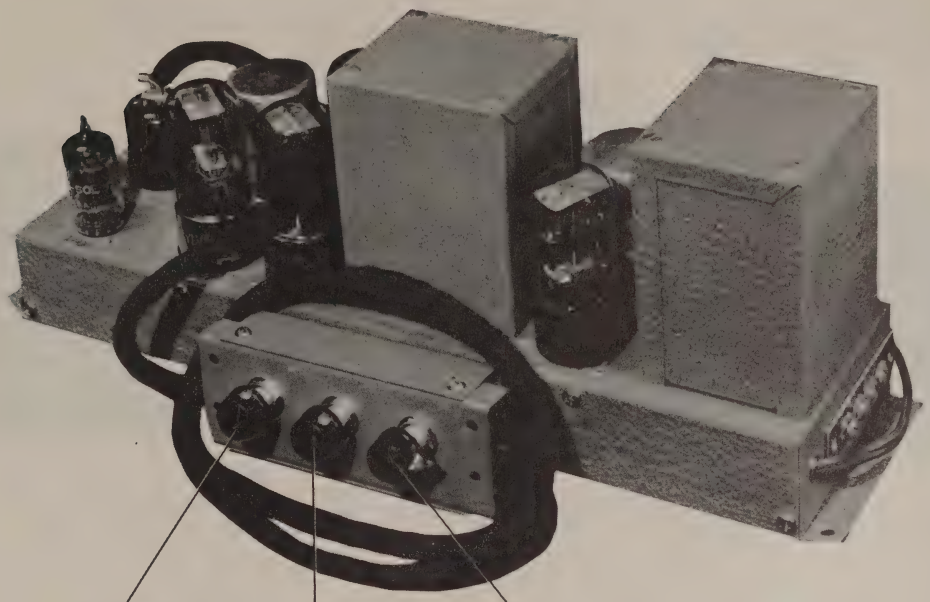
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

AUDIO DEVELOPMENT
MODEL 71-F



AUDIO DEVELOPMENT
MODEL 71-F

ADC MODEL 71-F

TRADE NAME	ADC, Model 71-F
MANUFACTURER	Audio Development Co., Minneapolis, Minn.
TYPE SET	AC Operated Audio Amplifier
TUBES (FIVE)	Types 12AX7 AF Amp., 6J5GT Phase Inverter, (2) 6V6GT Power Output, 6X5GT Rectifier
POWER SUPPLY	110-120 Volts AC RATING .525 Amp. @ 117 Volts AC

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PARTS LIST AND DESCRIPTIONS

ADC MODEL 71-F

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ADC PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	1st.-2nd. AF Amp.	12AX7	12AX7	9A	
V2	Phase inv.	6J5GT	6J5GT	6Q	
V3	Power Output	6V6GT	6V6GT	7AC	
V4	Power Output	6V6GT	6V6GT	7AC	
V5	Rectifier	6X5GT	6X5GT	6S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ADC PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1	8	450		PRS450/8		BR845A		TVA-1704	Filter
C2A	20	450		AF444J4A		UP2245CC		TVL-4712	▲ Filter
B	15	450							■ Filter
C	20	25							▲ Output Cath.
D	20	25							Output Cath.
C3A	20	450		AF444J4A		UP2245CC		TVL-4712	▲ Decoupling
B	15	450							■ Decoupling
C	20	25							▲ 1st AF Amp. Cath.
D	20	25							2nd AF Amp. Cath.
C4	.05	400		P488-05	DF-503	PTE4S5		4TM-S5	Audio Coupling
C5	.1	400		P488-1	DF-104	PTE4P1		4TM-P1	Audio Coupling
C6	100	500		1468-0001	D6-101	5W5T1	GP1K-100	1FM-31	Tone Comp.
C7	.02	400		P488-02		PTE4S2		4TM-S2	Tone Comp.
C8	.03	400		P688-03		PTE6S3		6TM-S3	Tone Comp.
C9	250	500		1468-00025	D6-251	5W5T25	GP2K-250	1FM-325	2nd AF Amp. Grid
C10	.05	400		P488-05	DF-503	PTE4S5		4TM-S5	Audio Coupling
C11	.05	400		P488-05	DF-503	PTE4S5		4TM-S5	Audio Coupling
C12	.05	400		P488-05	DF-503	PTE4S5		4TM-S5	Audio Coupling

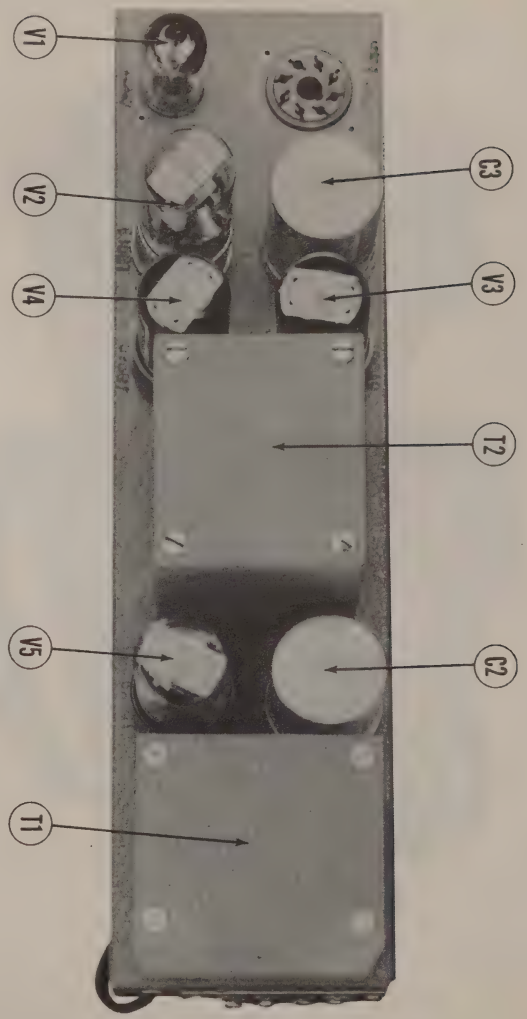
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ADC PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	500KΩ	½		Q13-133	AG-60-Z	B-60	Volume Control
B	Shaft			Not Req	RS-2	Not Req	Attach to R1A per instructions
R2A	500KΩ	½		Q13-133	AG-60-Z	B-60	Bass Control
B	Shaft			Not Req	RS-2	Not Req	Attach to R2A per instructions
R3A	100KΩ	½		Q11-128	AG-49-S	B-40	Treble Control
B	Shaft			Not Req	RS- 2	Not Req	Attach to R3A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ADC PART No.	IRC PART No.	IDENTIFICATION CODES
R4	10KΩ	½		BTS-10K	Tone Compensation
R5	100KΩ	½		BTS-100K	1st AF Amp. Grid
R6	390KΩ	½		BTS-390K	Series Input
R7	30KΩ	½			Voltage Divider
R8	1200Ω	½		BTS-1200	1st AF Amp. Cathode
R9	180KΩ	½		BTS-180K	1st AF Amp. Plate
R10	500Ω	½			2nd AF Amp Cathode
R11	5600Ω	½		BTS-5600	2nd AF Amp. Cathode
R12	470KΩ	½		BTS-470K	2nd AF Amp. Plate
R13	1Meg	½		BTS-1Meg-5%	Phase Inv. Grid
R14	1500Ω	½		BTS-1500-5%	Phase Inv. Cathode
R15	30KΩ	½			Phase Inv. Cathode
R16	30KΩ	½			Phase Inv. Plate
R17	30KΩ	½			Isolation
R18	560KΩ	½		BTS-560K	Output Grid
R19	560KΩ	½		BTS-560K	Output Grid
R20	360Ω	2		BW-2-360	Output Cathode - Wire Wound
R21	27KΩ	½		BTS-27K	Feedback
R22	100Ω	½		BTS-100	Filter
R23	1200Ω	½		BTS-1200	Filter
R24	12KΩ	½		BTS-12K	Filter
R25	12KΩ	½		BTS-12K	Filter

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

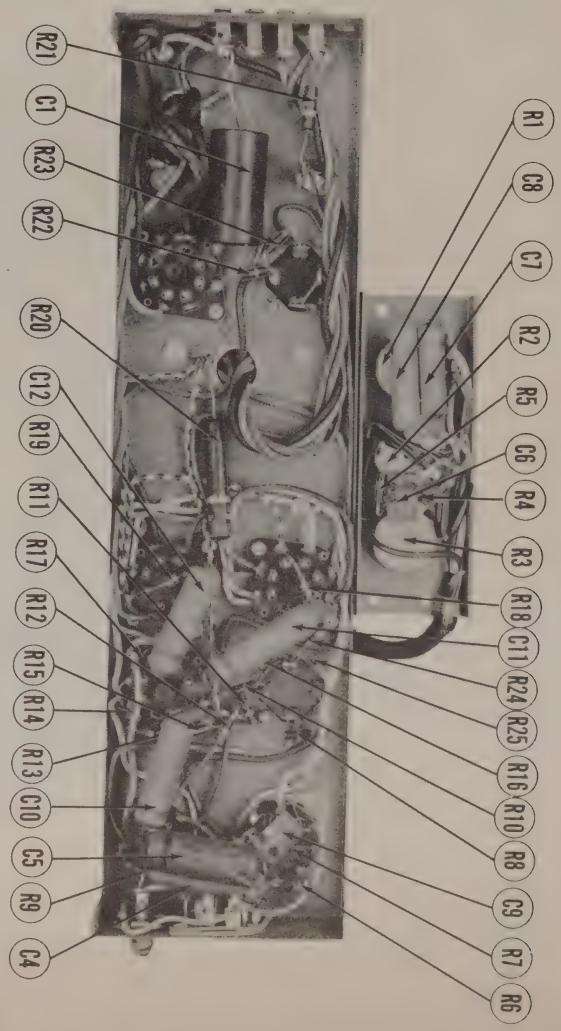
TRANSFORMER (POWER)

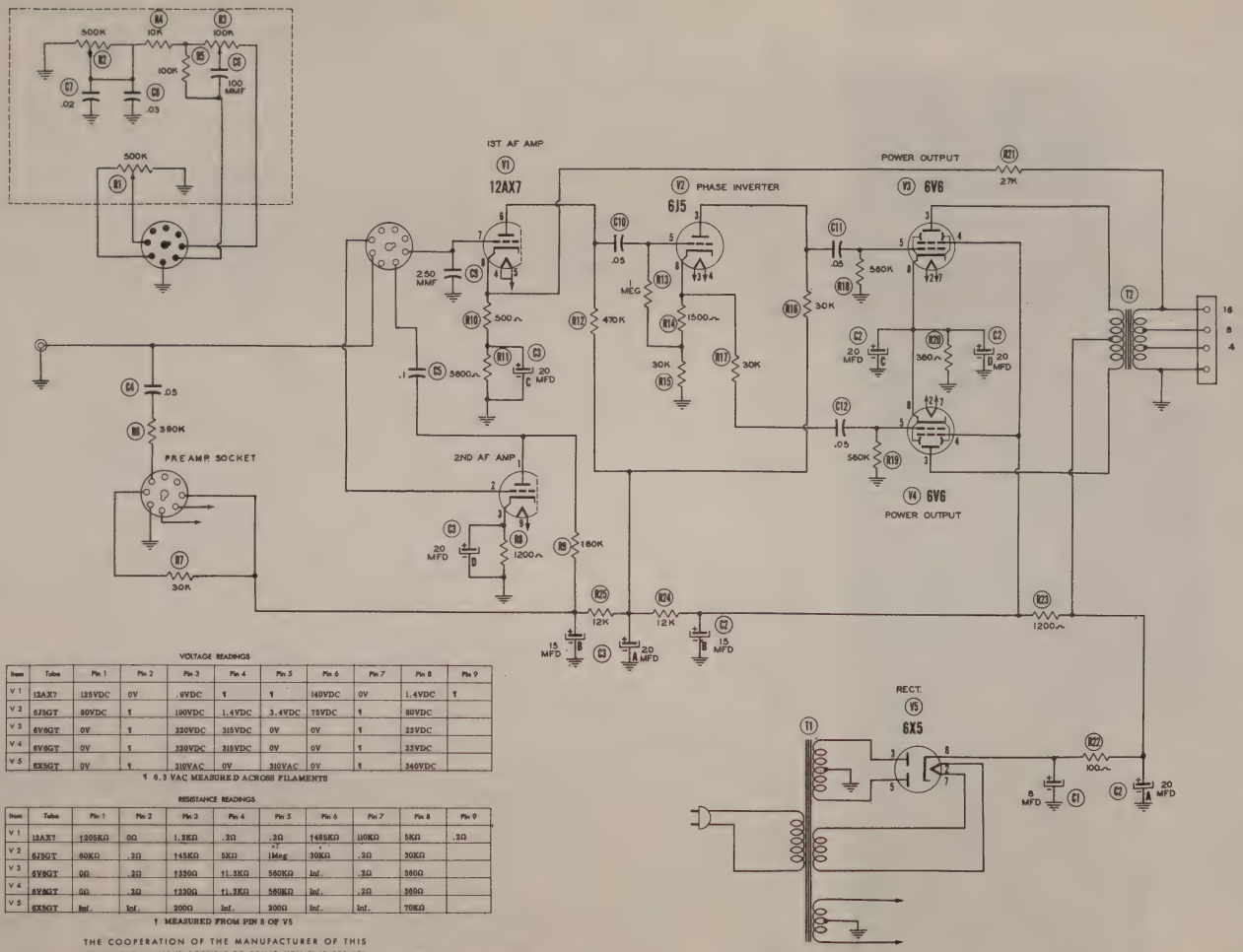
ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	ADC PART No.	STANCOR PART No.	THORDARSON PART No.	
T1	117VAC @ .525A	740VCT .082ADC	6.3V @ .6A	6.3V @ 1.50A	A6912			

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ADC PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	6.1KΩ CT	16Ω Taps 4Ω & 8Ω	460Ω CT	.8Ω Taps .3Ω & .42	A6914				

CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AX7	125VDC	0V	.9VDC	¶	¶	140VDC	0V	1.4VDC	¶
V 2	6J5GT	80VDC	¶	190VDC	1.4VDC	3.4VDC	75VDC	¶	80VDC	
V 3	6V6GT	0V	¶	320VDC	315VDC	0V	0V	¶	23VDC	
V 4	6V6GT	0V	¶	320VDC	315VDC	0V	0V	¶	23VDC	
V 5	6X5GT	0V	¶	310VAC	0V	310VAC	0V	¶	340VDC	

¶ 6.3 VAC MEASURED ACROSS FILAMENTS

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AX7	†205KΩ	0Ω	1.2KΩ	.2Ω	.2Ω	†485KΩ	110KΩ	5KΩ	.2Ω
V 2	6J5GT	60KΩ	.2Ω	†45KΩ	5KΩ	1Meg	30KΩ	.2Ω	30KΩ	
V 3	6V6GT	0Ω	.2Ω	†330Ω	†1.3KΩ	580KΩ	Inf.	.2Ω	360Ω	
V 4	6V6GT	0Ω	.2Ω	†330Ω	†1.3KΩ	580KΩ	Inf.	.2Ω	360Ω	
V 5	6X5GT	Inf.	Inf.	200Ω	Inf.	200Ω	Inf.	Inf.	70KΩ	

† MEASURED FROM PIN 8 OF V5

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128-3

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom vies.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - All controls at minimum, proper output load connected.

PHOTOFACT* Folder

*TRADE MARK

CORONADO MODEL
05TV1-43-9014A

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CORONADO MODEL
05TV1-43-9014A

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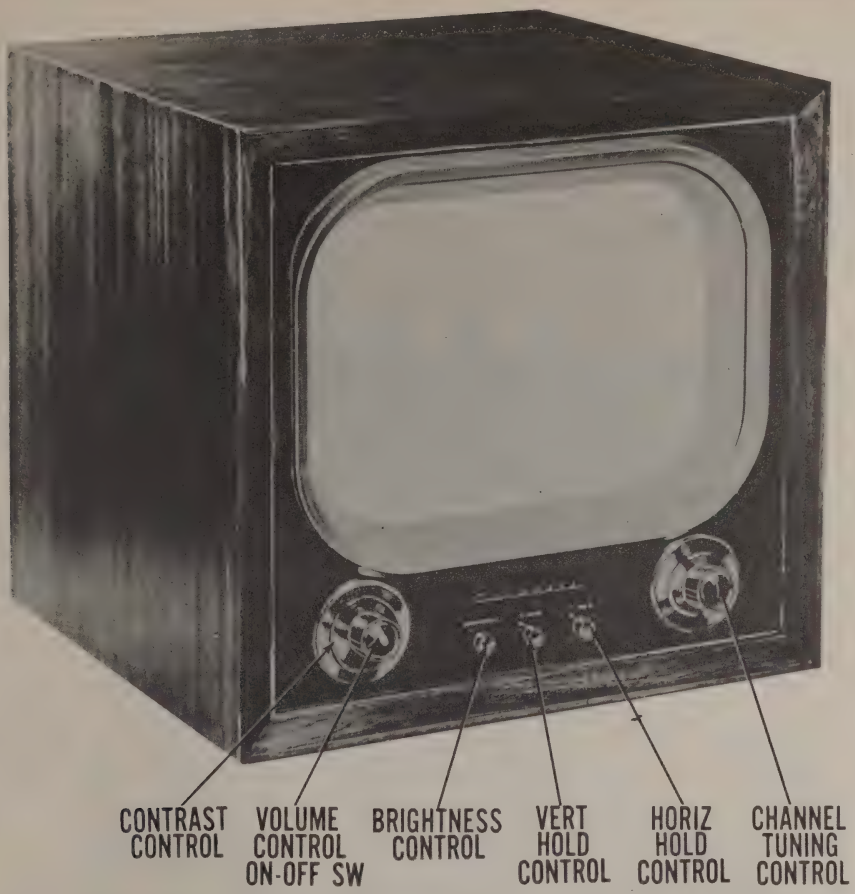

CORONADO
MODEL 05TV1-43-9014A

TRADE NAME	Coronado Model 05TV1-43-9014A (Ch. 16AY210)
SUPPLIER	Gamble-Skogmo, Inc., 15N. 8th St., Minneapolis, Minn.
TYPE SET	Television Receiver
TUBES	Twenty Two

POWER SUPPLY 110-120 Volts AC-60 Cycle RATING 2 Amp. @ 117 Volts AC
TUNING RANGE—Channels 2 thru 13

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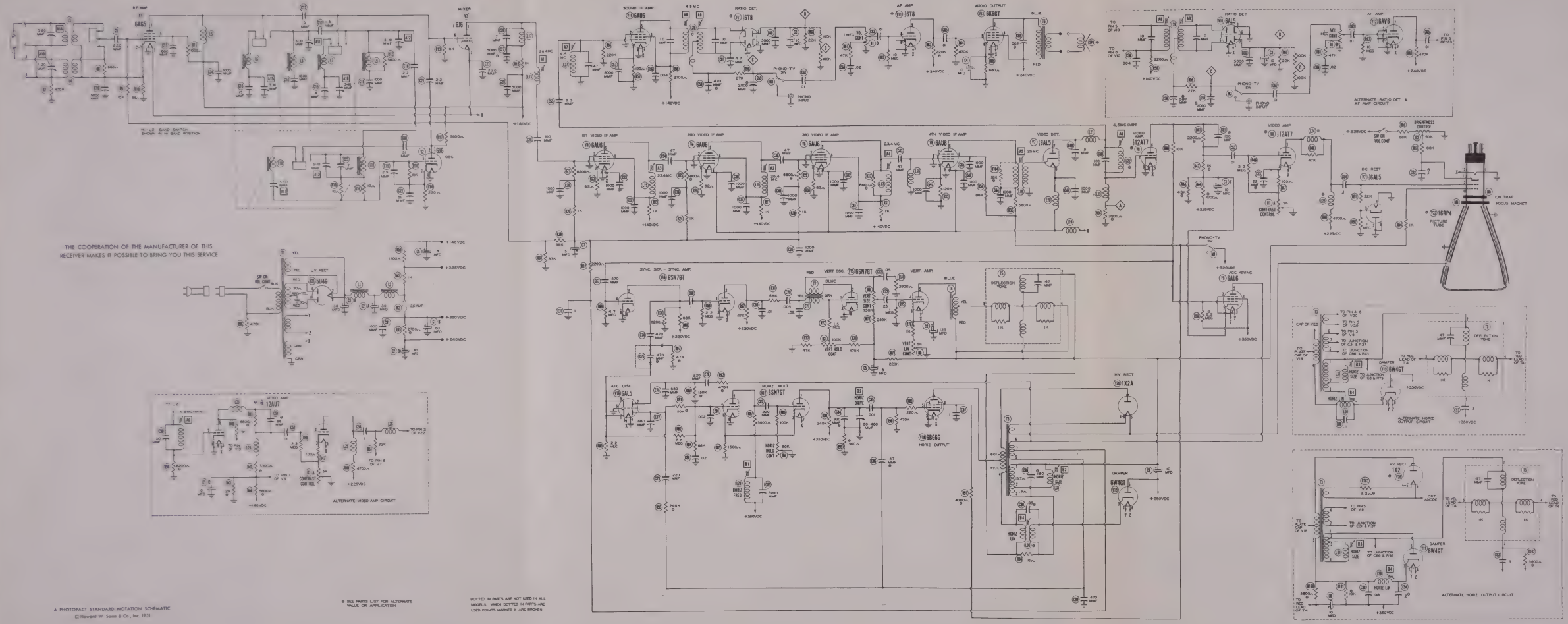
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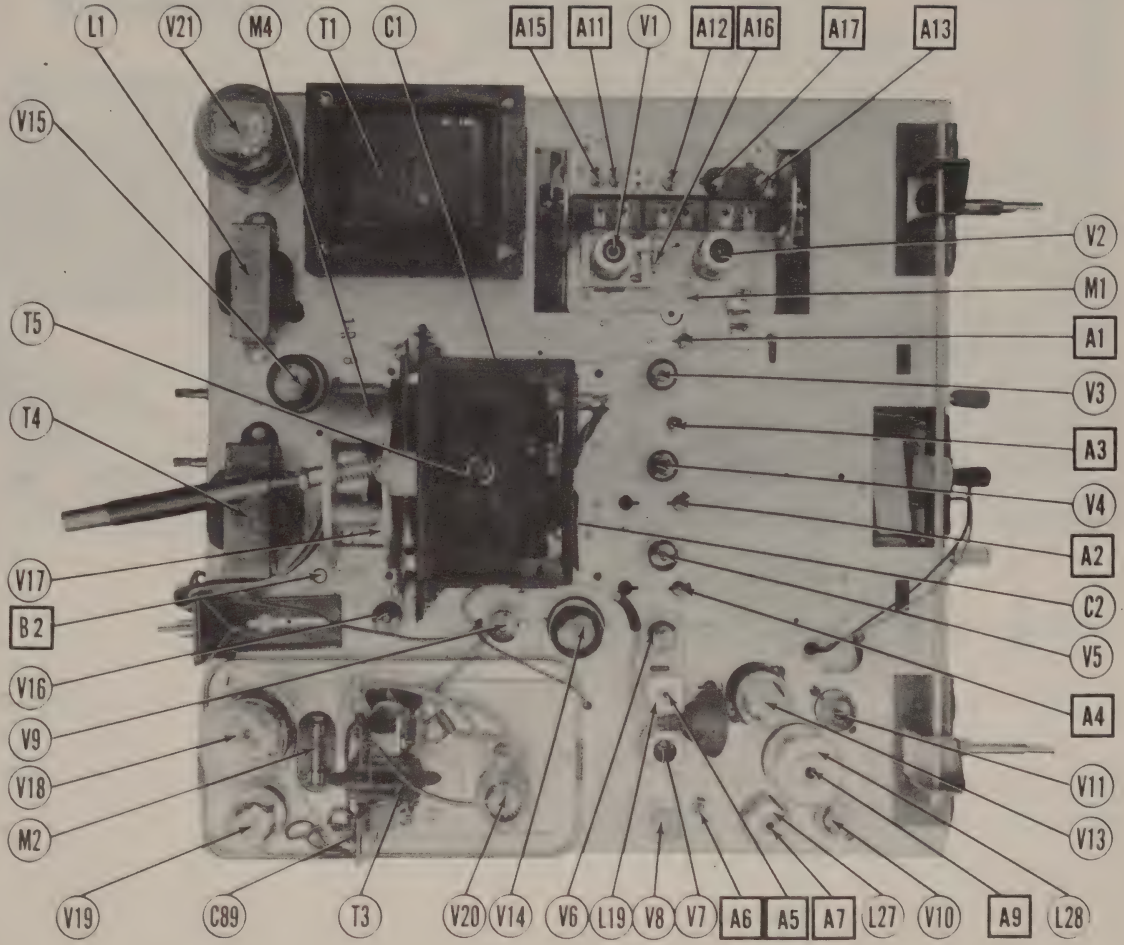
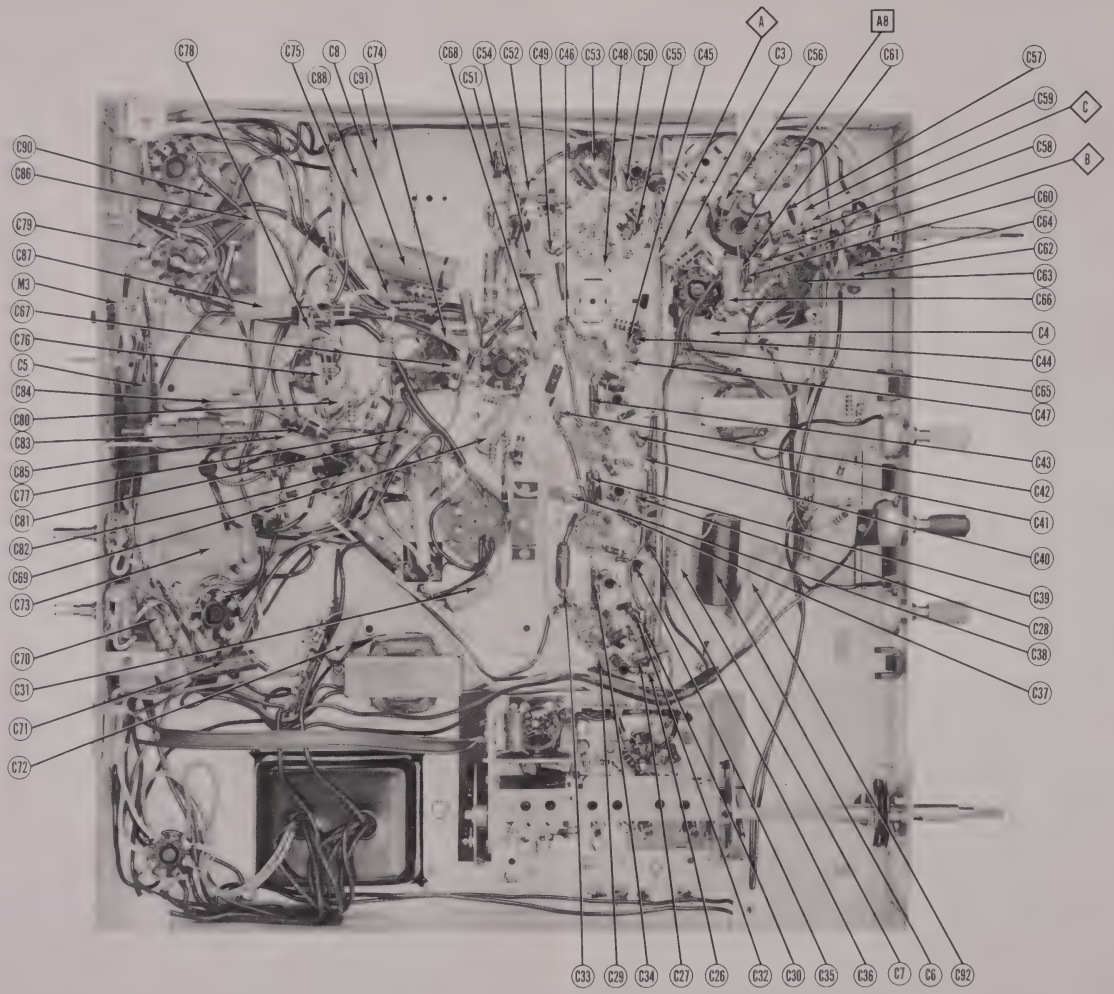
ALTERNATE VIDEO AMP CIRCUIT
ALTERNATE RATIO DET. & AF AMP CIRCUIT
ALTERNATE HORIZ OUTPUT CIRCUIT
CORONADO
MODEL 05TV1-43-9014A

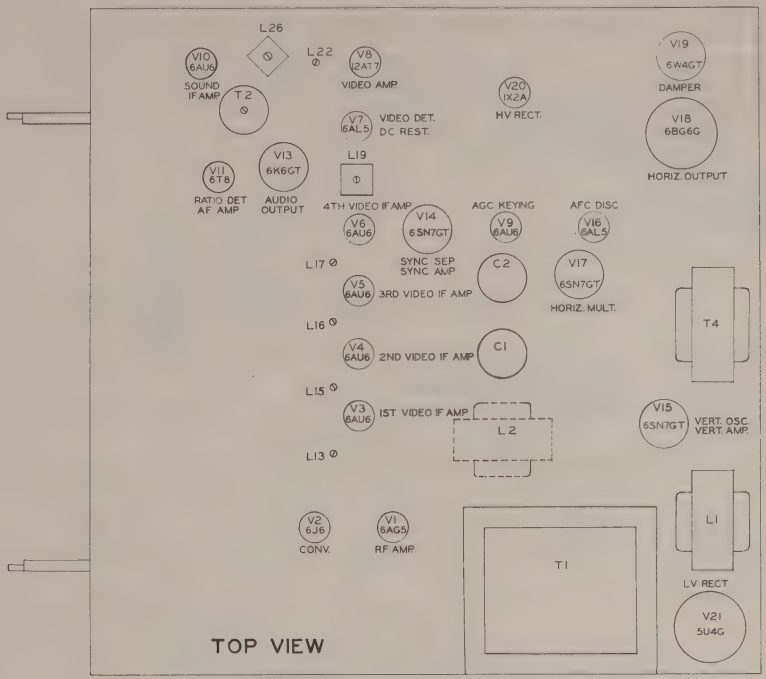
CORONADO
MODEL 05TV1-43-9014A

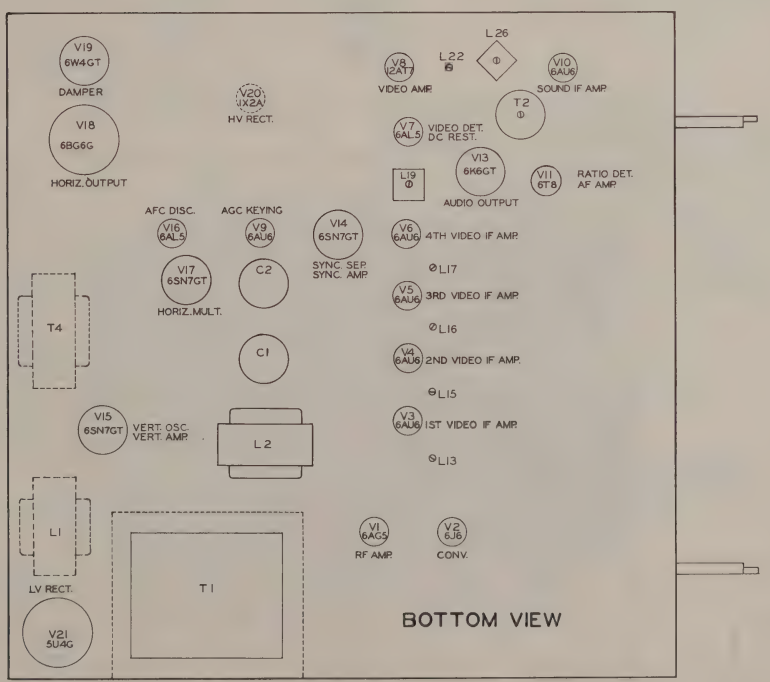


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW - CAPACITOR AND ALIGNMENT IDENTIFICATION





TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The end of the high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube to kill the high voltage.

VIDEO IF ALIGNMENT

Remove the converter tube (V2) from its socket and replace it with a 6J6 which has pin 2 removed.
Connect the negative lead of a 3 volt battery to the junction of R20 and C7, connect the positive lead to chassis.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	Not used	26.4MC	Any	Use VTVM. DC Probe to Point (A). Common to chassis.	A1, A2	Adjust for maximum deflection.
2.	Direct	"	"	23.4MC	"	"	A3, A4	"
3.	Direct	"	"	25MC	"	"	A5	"
4.	Direct	"	25MC (10MC SWP)	23.0MC 26.75MC	"	Vert. Amp. to Point (A). Low side to chassis.	A5	Adjust for maximum deflection. Check for response curve similar to figure 1. If necessary retouch A5 for proper response.

4.5MC TRAP ADJUSTMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	.001MFD	High side to pin 1 (cathode) of 6AL5 (V7). Low side to chassis.	Not used	4.5MC (400∿ Mod.)	Any	Vert. Amp. to pin 1 (plate) of 12AT7 (V8). Low side to chassis.	A6	Adjust for MINIMUM 400∿ indication on scope.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±1%) resistors in series from Point B to chassis. The junction of these two resistors is alignment Point D as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
6.	.001MFD	High side to pin 1 (cathode) of 6AL5 (V7). Low side to chassis.	4.5MC (Unmod.)	Any	DC Probe to Point (B). Common to chassis.	A7, A8	Adjust for maximum deflection.
7.	.001MFD	"	"	"	DC Probe to Point (C). Common to Point (D).	A9	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE.	ADJUST	REMARKS
6.	.001MFD	High side to pin 1 (cathode) of 6AL5 (V7). Low side to chassis.	4.5MC (450KC SWP)	4.5MC	Any	Vert. Amp. to Point (B). Low side to chassis.	A7, A8	Disconnect stabilizer capacitor C3. Adjust for maximum amplitude and symmetry as per figure 2.
7.	.001MFD	"	"	"	"	Vert. Amp. to Point (C) Low side to chassis.	A9	Reconnect capacitor C3. Adjust A9 so 4.5MC occurs at center of crossover lines as per figure 3. SLIGHTLY retouch A8 for maximum amplitude and straightness of crossover lines.

TUNER ALIGNMENT

Pre-set the adjusting screws as shown in figure 5.
Turn the tuning shaft until the tuning core carriage is at the top of its stroke.
Pre-set all tuning cores 1.6 inches from the top of the core to the coil mounting strip. Then turn the low band oscillator core (L11) an additional 4 turns out of the coil.
Remove the dummy converter tube and replace the original 6J6 in its socket.

LOW BAND TUNER ALIGNMENT

Turn the tuning control until the cores are at the extreme top of their stroke with the switch in "low band" position.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	85MC (10MC SWP)	83.25MC 87.25MC	6	Vert. Amp. to Point (A). Low side to chassis.	A10, A11, A12	Adjust for maximum amplitude of response with symmetrical peaks. If A-11 shows insufficient range turn L8 core slightly into the coil.
9.	"	"	"	"	"	"	A13	Adjust to place video marker at 50% on response curve as per figure 4. If necessary repeat step 8.
10.	"	"	63MC (10MC SWP)	61.25MC 65.75MC	3	"	A11, A12	Adjust tuning control until video marker appears at 50% on response curve. Adjust A11 and A12 for compromise which will give best overall response across the low band channels.
			69MC (10MC SWP)	67.25MC 71.75MC	4			
			79MC (10MC SWP)	77.25MC 81.75MC	5			
			57MC (10MC SWP)	55.25MC 59.75MC	2			

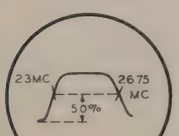


FIG. 1

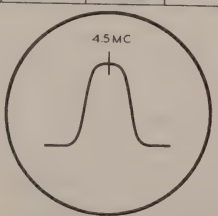


FIG. 2

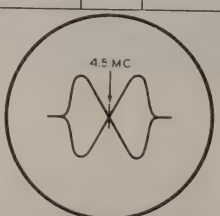


FIG. 3

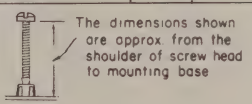
FIG. 4

ALIGNMENT INSTRUCTIONS (CONT.)

HIGH BAND TUNER ALIGNMENT

Turn the tuning control until the cores are at the extreme top of their stroke with the switch to "high band" position.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	213MC (10MC SWP)	211.25MC 215.75MC	13	Vert. Amp. to Point A. Low side to chassis.	A14, A15, A16	Adjust for maximum amplitude of response with symmetrical peaks.
12.	"	"	"	"	"	"	A17	Adjust to place video marker at 50% on response curve as per figure 4. If necessary repeat step 11.
13.	"	"	207MC (10MC SWP)	205.25MC 209.75MC	12	"	A15, A16	Adjust tuning control to place video marker at 50% on response curve. Adjust A15 and A16 for compromise which will give best overall response across the high band channels.
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			177MC (10MC SWP)	175.25MC 179.75MC	7			



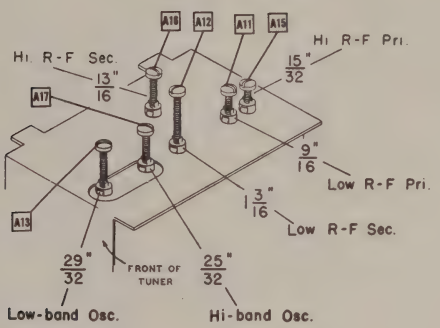
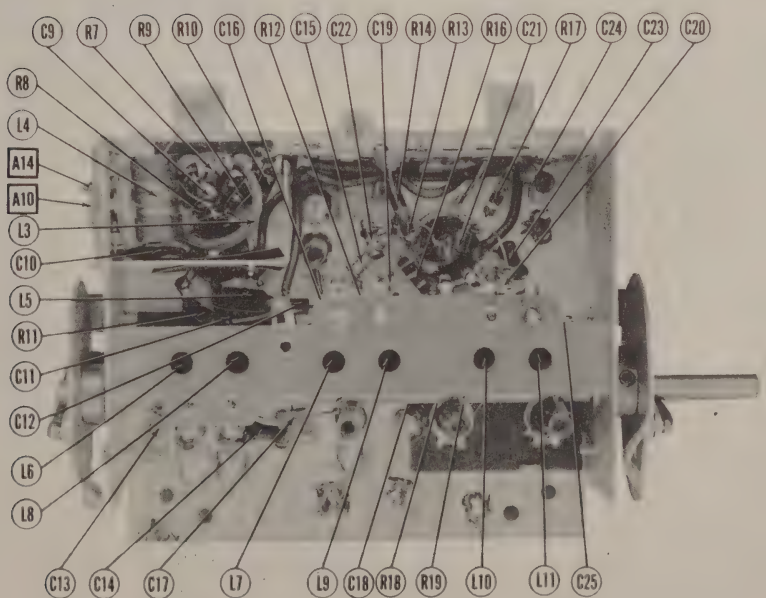


FIG. 5



RF TUNER-BOTTOM VIEW

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	0V	.6VDC	6.3VAC	0V	135VDC	130VDC	.6VDC		
V 2	6J6	130VDC	80VDC	6.3VAC	0V	§-1VDC	0V	2.8VDC		
V 3	§AU6	0V	0V	0V	6.3VAC	130VDC	130VDC	1VDC		
V 4	§AU6	0V	0V	0V	6.3VAC	130VDC	130VDC	1VDC		
V 5	6AU6	0V	0V	0V	6.3VAC	130VDC	130VDC	1VDC		
V 6	§AU6	0V	0V	0V	6.3VAC	285VDC	135VDC	1.2VDC		
V 7	6AL5	0V	0V	5.7VDC	0V	1.4VDC	0V	-3.8VDC		
V 8	12AT7	140VDC	.5VDC	40VDC	6.3VAC	6.3VAC	125VDC	-.4VDC	0V	0V
V 9	6AU6	125VDC	155VDC	¶ 155VDC	¶ 155VDC	*	320VDC	155VDC		
V 10	6AU6	0V	0V	0V	6.3VAC	115VDC	115VDC	1VDC		
V 11	6T8	-.2VDC	-.4VDC	-.2VDC	0V	6.3VAC	0V	0V	-.4VDC	80VDC
V 12	6AV6	NOT USED IN ALL MODELS								
V 13	6K6GT	0V	0V	230VDC	240VDC	0V	0V	6.3VAC	18VDC	
V 14	6SN7GT	-1.5VDC	70VDC	0V	-1.6VDC	35VDC	0V	6.3VAC	0V	
V 15	6SN7GT	-2.6VDC -7.3VDC	105VDC	0V	0V	430VDC	25VDC 15VDC	6.3VAC	0V	
V 16	6AL5	2.6VDC	-.3VDC	6.3VAC	0V	2.6VDC	0V	-.2VDC		
V 17	6SN7GT	-4VDC -5.6VDC	115VDC	12VDC	-.1VDC	290VDC	12VDC	6.3VAC	0V	
V 18	6BG6G	-.2VDC	0V	0V	-.4VDC	-18VDC	-18VDC	6.3VAC	270VDC	TOP CAP *
V 19	6W4GT	440VDC	*	440VDC	*	320VDC	*	¶ 155VDC	¶ 155VDC	
V 20	1X2A	* DO NOT MEASURE								
V 21	5U4G	0V	340VDC	▲	340VAC	▲	340VAC	320VDC	340VDC	
V 22	16RP4	0V	1.2VDC	PIN 10 430VDC	PIN 95VDC	11 0V	PIN 12 6.3VAC			

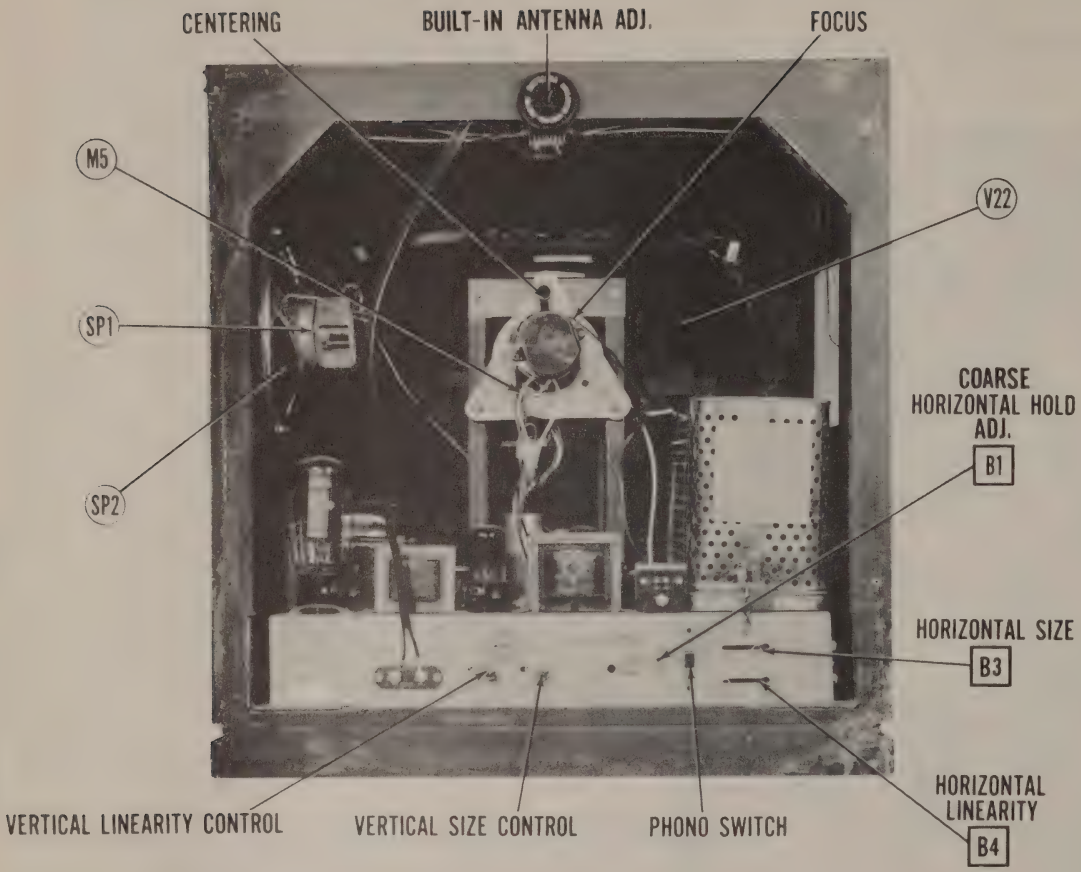
§ TAKEN WITH VACUUM TUBE VOLTMETER
* DO NOT MEASURE
▲ 117VAC MEASURED ACROSS PINS 3 AND 5 OF V21
¶ 6.3VAC MEASURED ACROSS FILAMENTS
PHONO-TV SWITCH IN TV POSITION

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	43KΩ	68Ω	.1Ω	0Ω	†2.3KΩ	†3.3KΩ	68Ω		
V 2	6J6	†3.3KΩ	†7.9KΩ	.1Ω	0Ω	10KΩ	10KΩ	220Ω		
V 3	6AU6	90KΩ	0Ω	0Ω	.1Ω	†3.3KΩ	†3.3KΩ	82Ω		
V 4	6AU6	90KΩ	0Ω	0Ω	.1Ω	†3.3KΩ	†3.3KΩ	82Ω		
V 5	6AU6	90KΩ	0Ω	0Ω	.1Ω	†3.3KΩ	†3.3KΩ	82Ω		
V 6	6AU6	2.3KΩ	0Ω	0Ω	.1Ω	†5.7KΩ	†68KΩ	120Ω		
V 7	6AL5	.9Ω	0Ω	1.2Ω	0Ω	1 Meg.	0Ω	3.9KΩ		
V 8	12AT7	†5.8KΩ	2.2 Meg.	5.1KΩ	.1Ω	.1Ω	†9KΩ	3.9KΩ	0Ω	0Ω
V 9	6AU6	†20KΩ	†5.8KΩ	†5.8KΩ	†5.8KΩ	90KΩ	†70Ω	†5.8KΩ		
V 10	6AU6	3.1Ω	0Ω	0Ω	.1Ω	†4.5KΩ	†4.5KΩ	120Ω		
V 11	6T8	Inf.	22KΩ	Inf.	0Ω	.1Ω	0Ω	0Ω	10 Meg.	†220KΩ
V 12	6AV6	NOT USED IN ALL MODELS.								
V 13	6K6GT	Inf.	0Ω	†3.3KΩ	†2.8KΩ	470KΩ	Inf.	.1Ω	680Ω	
V 14	6SN7GT	2.2 Meg.	†47KΩ	0Ω	4.7 Meg.	†30KΩ	0Ω	.1Ω	0Ω	
V 15	6SN7GT	1.5 Meg. 1.6 Meg.	#1.1 Meg.	0Ω	1 Meg.	#800Ω	6KΩ 1KΩ	.1Ω	0Ω	
V 16	6AL5	2.2 Meg.	150KΩ	.1Ω	0Ω	2.2 Meg.	0Ω	4.5 Meg.		
V 17	6SN7GT	100KΩ 150KΩ	†220KΩ	1.5KΩ	4.4 Meg.	†5.8KΩ	1.5KΩ	.1Ω	0Ω	
V 18	6BG6G	4.5 Meg.	0Ω	0Ω	340KΩ	470KΩ	470KΩ	.1Ω	†4.8KΩ	TOP CAP #60Ω
V 19	6W4GT	#8Ω	90KΩ	400KΩ	550KΩ	†70Ω	90KΩ	†5.8KΩ	†5.8KΩ	
V 20	1X2A	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP #660Ω
V 21	5U4G	Inf.	35KΩ	470KΩ	30Ω	470KΩ	30Ω	†70Ω	35KΩ	
V 22	16RP4	0Ω	1 Meg.	PIN 10 #1KΩ	PIN 100KΩ	11 150KΩ	PIN 12 .1Ω			

† MEASURED FROM PIN 8 OF V21
# MEASURED FROM PIN 3 OF V19
PHONO-TV SWITCH IN TV POSITION

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Turn the horizontal hold control to the mid-position of its range.

Adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.

Adjust the horizontal drive trimmer (B2) counter clockwise until vertical white lines appear in the picture, and then clockwise 1/2 turn farther than required to just remove the white lines.

Adjust the horizontal size slug until the picture fills the tube horizontally.

Adjust the horizontal linearity slug until the picture is symmetrical from left to right.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: CORONADO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp.	6AG5	6AG5	7BD	
V2	Converter	6J6	6J6	7BF	
V3	1st Video IF Amp.	6AU6	6AU6	7BK	
V4	2nd Video IF Amp.	6AU6	6AU6	7BK	
V5	3rd Video IF Amp.	6AU6	6AU6	7BK	
V6	4th Video IF Amp.	6AU6	6AU6	7BK	
V7	Video Det.-DC Restorer	6AL5	6AL5	6BT	
V8	Video Amp.	12AT7	12AT7	9A	
V9	AGC Keying	6AU6	6AU6	7BK	
V10	Sound IF Amp.	6AU6	6AU6	7BK	
V11A	Ratio Det.-AF Amp.	6T8	6T8	9E	
B	Ratio Det.	6AL5	6AL5	6BT	
V12	AF Amp.	6AV6	6AV6	7BT	Not used in models using V11A.
V13	Audio Output	6K6GT	6K6GT	7S	
V14	Sync. Sep.-Sync. Amplifier	6SN7GT	6SN7GT	8BD	
V15	Vert. Osc.-Vert. Amp.	6SN7GT	6SN7GT	8BD	
V16	AFC Discr.	6AL5	6AL5	6BT	
V17	Horiz. Mult.	6SN7GT	6SN7GT	8BD	
V18	Horiz. Output	6BG6G	6BG6G	5BT	
V19	Damper	6W4GT	6W4GT	4CG	
V20A	H.V. Rectifier	1X2A	1X2A	7CB	
B	H.V. Rectifier	1X2	1X2	7CB	
V21	L.V. Rectifier	5U4G	5U4G	5T	
V22A	Picture Tube	16RP4	16RP4	12D	See chart at end of parts list.
B	Picture Tube	16TP4	16TP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: CORONADO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	30	450	A-8C-17845	AFH3666J		UPT36145		TVL-3790	▲ Filter
B	60	450							■ Filter
C	10	450							▲ Decoupling
C2A	30	450	A-8C-18487	AF66J4A		UPT409		TVL-3706	▲ Filter
B	30	450		PRS25/100					■ Filter
C	125	25							▲ Vert. Output Cath.
C3	10	50	A-8C-17183	PRS50/10		BR105		TVA-1304	Stabilizing Cap.
C4	10	50	A-8C-17183	PRS50/10		BR105		TVA-1304	Output Cath. Bypass
C5	8	450	A-8C-13453	PRS450/8		BR845A		TVA-1704	Decoupling
C6	8	450	A-8C-13453	PRS450/8		BR845A		TVA-1704	Decoupling
C7	5	50	B-8C-19424	PRS150/4		BR105		TVA-1303	AGC Filter
C8	10	150	A-8C-11495	PRS150/12		BR1015		TVA-1406	Decoupling
C9	220		C-8G-16045	SI220	D6-221		GP2K-220	19C13	RF Coupling
C10	5000		A-8G-13962	BPD-005	DD-502		811-005	29C1	RF Amp. Cathode
C11	1000		C-8G-13201	SI1000	D6-102		GP2L-001	19C1	RF Amp. Screen
C12	.5		A-8G-12495-7		TCZ-.5				RF Coupling
C13	15		C-8G-17305		TCZ-15		NPOK-15	19C5	Fixed Trimmer
C14	1000		C-8G-13201	SI1000	D6-102		GP2L-001	19C1	RF Bypass
C15	4		C-8G-11893				NPOK-4		Fixed Trimmer
C16	1000		C-8G-13201	SI1000	D6-102		GP2L-001	19C1	RF Bypass
C17	1.5		A-8G-12495-4	SI1.5NPO	TCZ-1.5		NPOK-1.5		RF Coupling
C18	2.2		A-8G-12495-4		TCZ-2.2				Osc. Coupling
C19	2.5		C-8G-15737						Osc. Grid Cap
C20	51		A-8G-11891	SI50N750	TCN-51		N750L-51		Osc. Feedback
C21	2.2		A-8G-12495-4		TCZ-2.2				Osc. Coupling
C22	51		A-8G-11891	SI50	TCN-51		N750L-51	19C9	Conv. Cath. Bypass
C23	220		C-8G-16045	SI220	D6-221		GP2K-220	19C13	Conv. Fil. Bypass
C24	1000		C-8G-13201	SI1000	D6-102		GP2L-001	19C1	RF Bypass
C25	7		C-8G-15224				N750K-7		Fixed Trimmer
C26	7		C-8G-11790		TCZ-6.8		NPOK-6.8		Fixed Trimmer
C27	5000		A-8G-13962	BPD-005	DD-502	1D5D5	811-005	29C1	Conv. Plate Dec.
C28	5000		A-8G-13962	BPD-005	DD-502	1D5D5	811-005	29C1	RF Bypass
C29	100	500	C-8F3-8	1468-0001	D6-101	5W5T1	GP1K-100	19C11	IF Coupling
C30	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-001	19C1	AGC Filter
C31	.1	200	C-8D-17259	P288-1	DF-104	PTE4P1		2TM-P1	AGC Filter
C32	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-001	19C1	1st V. IF Dec.
C33	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-001	19C1	1stV. IF Fil.
C34	47	500	C-8F3-109	1468-00005	D6-470	5W5Q5	GP1K-47	1FM-45	IF Coupling
C35	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-001	19C1	AGC Filter
C36	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-001	19C1	AGC Filter
C37	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-001	19C1	2nd V. IF Dec.
C38	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-001	19C1	2nd V. IF Fil.
C39	47	500	C-8F3-109	1468-00005	D6-470	5W5Q5	GP1K-47	1FM-45	IF Coupling
C40	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-001	19C1	AGC Filter
C41	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-001	19C1	3rd V. IF Dec.
C42	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-001	19C1	3rd V. IF Fil.
C43	47	500	C-8F3-109	1468-00005	D6-470	5W5Q5	GP1K-47	1FM-45	IF Coupling
C44	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-001	19C1	4th V. IF Plate Dec.
C45	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-001	19C1	4th V. IF Screen
C46	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-001	19C1	4th V. IF Fil.
C47	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-001	19C1	4th V. IF Cath.
C48	5		C-8G-12166	SI5NPO	TCZ-4.7	5N5V5	NPOK-5	MS-55	V. Diode Filter
C49	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-001	19C1	V. Det.-DC Res. Fil.
C50	100	500	C-8F3-111	1469-0001	TCZ-100	5R5T1	NPOM-100	MS-31	Fixed Trimmer
C51	100	500	C-8F3-111	1469-0001	TCZ-100	5R5T1	NPOM-100	MS-31	Peaking Note 1.
C52	.01	400	C-8D-17270	P488-01	D6-103	PTE4S1	821-01	4TM-S1	Video Coupling
C53	22			SI22	D6-220	5W5Q25	GP1K-22	19C23	V. Amp. Cath. †
C54	.1	400	C-8D-10983	P488-1	DF-104	PTE4P1		4TM-P1	Video Coupling
C55	3.3		A-8G-12495-3	SI3.3NPO	TCZ-3.3		NPOK-3.3		S. IF Coupling
C56	.004	400	C-8D-17958	P888-004	D6-402	PTE6D4	GP2M-004	6TM-D4	S. IF Decoupling
C57	5000		A-8G-13962	BPD-005	DD-502	1D5D5	811-005	29C1	S. IF Cathode
C58	470	500	C-8F3-121	1468-0005	D6-471	5W5T5	GP2K-470	1FM-35	Diode Load Cap *
C59	2000		C-8G-16049	SI2000	D6-202	1W5D2	GP2M-002	29C2	De-emphasis Note 4.

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA CORONADO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C60	5000		A-8G-13962	BPD-005	DD-502	1DSD5	811-005	39C1	RF Bypass
C61	4.7			214 TNPO	TC2-4.7	5R5Y5	NPO6K-4.7	MS-55	Balancing
C62	.01	200	C-8D-17258	P488-01	D6-103	PTE4S1	831-01	4TM-S1	Audio Coupling
C63	.01	200	C-8D-17258	P488-01	D6-103	PTE4S1	831-01	4TM-S1	Audio Coupling
C64	.02	200	C-8D-17268	P488-02	DF-303	PTE4S3		2TM-S2	Tone Comp.
C65	.01	400	C-8D-17270	P488-01	D6-103	PTE4S1	831-01	4TM-S1	Audio Coupling
C66	.003	600	C-8D-10759	P688-003	D6-203	PTE6D2	GP2M-003	6TM-D2	Output Plate Bypass Note 5.
C67	470	500	C-8F3-121	1468-0005	D6-471	5W5T5	GP2K-470	1FM-35	Sync. Coupling
C68	.1	200	C-8D-17252	P388-1	DF-104	PTE4P1		2TM-P1	Sync. Coupling
C69	01	400	C-8D-10761	P488-01	D6-103	PTE4S1	831-01	4TM-S1	Sync. Amp. Plate
C70	.005	800	C-8D-10935	P688-005	D6-502	PTE6D5	811-005	6TM-D5	Vert. Sync. Coupling
C71	.02	400	C-8D-10774	P488-02	DF-303	PTE4S3		4TM-S2	Vert. Osc. Grid
C72	.05	400	C-8D-14483	P488-05		PTE4S5		4TM-S5	Vert. Discharge
C73	.25	400	C-8D-13439	P488-25		GT4P25		4TM-P25	Vert. Sweep Coupling
C74	470	500	C-8F3-121	1468-0005	D6-471	5W5T5	GP2K-470	1FM-35	Differentiator Net
C75	470	500	C-8F3-121	1468-0005	D6-471	5W5T5	GP2K-470	1FM-35	Hor. Sync. Coupling †
C76	680	500	C-8F3-123	S1680	D6-681	1W5T7	GP2K-680	1FM-37	Voltage Divider
C77	680	500	C-8F3-123	S1680	D6-681	1W5T7	GP2K-680	1FM-37	Voltage Divider
C78	220	500	C-8F3-117	S1220	D6-221	5W5T25	GP2K-220	1FM-325	Hor. Feedback
C79	220	500	C-8F3-117	S1220	D6-221	5W5T25	GP2K-220	1FM-325	Hor. Feedback
C80	.02	200	C-8D-17268	P488-02	DF-303	PTE4S3		2TM-S2	Hor. Filter
C81	.002	600	C-8D-10778	P688-002	D6-202	PTE6D2	GP2M-002	6TM-D3	AFC Filter
C82	220	500	C-8F3-117	1468-00025	D6-221	5W5T25	GP2K-220	1FM-325	Hor. MV Feedback
C83	1000	500	C-8F11-133	1D8-004		1D8SD4		1FM-4	Fixed Trimmer
C84	330	500		1469-00035	D6-331	5R5T4	GP2K-330	MS-34	Hor. Discharge †
C85	.001	600	C-8D-13020	P688-001	D6-102	PTE6D1	GP2L-001	6TM-D1	Hor. Sweep Coupling
C86	47		C-8G-13198	Q147	D6-470	3W5Q5	GP1K-47	19C25	Hor. Feedback Note 2.
C87	.1	400	C-8D-10983	P488-1	DF-104	PTE4P1		4TM-P1	Hor. Output Screen
C88	.05	200		P288-05		PTE4S5		2TM-S5	Damper Filter ‡ Note 3
C89	150	500							Fitted Trimmer †
C90	470	500	C-8F3-121	1468-0005	D6-471	5W5T5	GP2K-470	1FM-35	Voltage Divider
C91	1000	500	C-8F6-135	1467-001	D6-102	1W5D1	GP2L-001	1FM-31	RF Bypass
C92	.1	400	C-8D-10760	P488-1	DF-104	PTE4P1		4TM-P1	Pic. Tube Cath. †
C93	.5	200	C-8D-11270	P288-5		GT2P5		2TM-P5	Hor. Sweep Coupling
C94	.2	200	C-8D-17257	P488-2		GT4P2		2TM-S2	Damper Filter †

* Some models use 560MMF in this application. Mfgrs. part # C-8F3-122.
† Not used in all models.
‡ Some models use 390 MMF in this application. Mfgrs. part # C-8F3-120.
Some models use .1MFD in this application. Mfgrs. part # C-8D-10771.
◆ Some models use 1000MMF in this application. Mfgrs. part # C-8G-13201.
Note 1. Some models used 68MMF in this application. Mfgrs. part # C-8F3-111.
Note 2. Some models used 10MMF in this application. Mfgrs. part # C-8G-12199.
Note 3. Some models used .08MFD in this application. Mfgrs. part # C-8D-18963.
Note 4. Some models used 470MMF in this application. Mfgrs. part # C-8F3-12.
Note5. Some models used .01MFD in this application. Mfgrs. part # C-8D-10761.

CONTROLS

ITEM No.	RATING RESIST. ANCE	RATING WATTS	REPLACEMENT DATA CORONADO PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	5000Ω		A-10A-18441		RTV-218	SBBT-617-8	Contrast control - panel
B	1 meg						Volume control and SW tap④ 90KΩ - rear
R2A	50KΩ		A-10B-17764	Q11-123	AG-44-8	AN-31	Brightness control
B	Shaft		Not req.	Not req.	KS8-3	AK-4	Attach to R2A per instructions
R3A	100KΩ		A-10B-17275	Q11-128	AG-49-8	AN-40	Vert. hold control
B	Shaft		Not req.	Not req.	KS8-3	AK-4	Attach to R3A per instructions
R4A	50K		A-10B-17764	Q11-123	AG-44-8	AN-31	Horizontal hold control
B	Shaft		Not req.	Not req.	KS8-3	AK-4	Attach to R4A per instructions
R5A	5000Ω		A-10B-17766	Q11-114	AM-19-8	AN-10	Vert. linearity control
B	Shaft		Not req.	Not req.	FK8-1/4	AK-1	Attach to R5A per instructions
R6A	750KΩ		A-10B-18340		AG-81-8	AN-89	Vert. size control
B	Shaft		Not req.		FK8-1/4	AK-1	Attach to R6A per instructions

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA CORONADO PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ARE ± 10% UNLESS OTHERWISE STATED
R7	470KΩ	½	C-9B1-94	BTS-470 K	Antenna Isolator
R8	680Ω	½	C-9B1-80	BTS-680	Antenna Coil Shunt
R9	10KΩ	½	C-9B1-74		RF Amp. Grid
R10	68Ω	½	C-9B1-48		RF Amp. Cathode
R11	1000Ω 20%	½	C-9B1-13	BTS-1000	RF Amp. Plate
R12	5600Ω	½	C-9B1-71		RF Coil Shunt
R13	10KΩ	½	C-9B1-74		Converter Grid
R14	220Ω	½	C-9B1-54	BTS-220	Converter Cathode
R15	1000Ω	½	C-9B1-13	BTS-1000	Converter Decoup
R16	10KΩ	½	C-9B1-74		Osc. Grid
R17	5600Ω	½	C-9B1-71		Osc. Plate
R18	10Ω	½	C-9B1-38		Parasitic Supp
R19	10Ω	½	C-9B1-38		Parasitic Supp
R20	1000Ω	½	C-9B1-62	BTS-1000	AGC Network
R21	8200Ω	½	C-9B1-73		1st Video IF Amp. Grid
R22	82Ω	½	C-9B1-49	BTS-82	1st Video IF Amp. Cathode
R23	1000Ω 20%	½	C-9B1-13	BTS-1000	1st Video IF Amp. Decoup
R24	1000Ω 20%	½	C-9B1-13	BTS-1000	AGC Network
R25	6800Ω 20%	½			2nd Video IF Amp. Grid - See Note 6
R26	82Ω	½	C-9B1-49	BTS-82	2nd Video IF Amp. Cathode
R27	1000Ω 20%	½	C-9B1-13	BTS-1000	2nd Video IF Amp. Decoup
R28	1000Ω 20%	½	C-9B1-13	BTS-1000	AGC Network
R29	6800Ω 20%	½			3rd Video IF Amp. Grid - See Note 7
R30	82Ω	½	C-9B1-49	BTS-82	3rd Video IF Amp. Cathode
R31	1000Ω	½	C-9B1-62	BTS-1000	3rd Video IF Amp. Decoup
R32	6800Ω 20%	½			4th Video IF Transformer Shunt - See Note 8
R33	120Ω	½	C-9B1-51	BTS-120	4th Video IF Amp. Cathode
R34	68KΩ	½			4th Video IF Amp. Screen
R35	560Ω	½			4th Video IF Amp. Plate Decoup
R36	3900Ω	½	C-9B1-69	BTS-3900	Video Det. Diode Load - See Note 7
R37	2200Ω	½	C-9B1-66	BTS-2200	AGC Network
R38	68KΩ	½	C-9B1-84	BTS-68K	AGC Network
R39	33KΩ	½	C-9B1-80	BTS-33K	AGC Network

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA CORONADO PART No.	IRC PART No.	IDENTIFICATION CODES
R40	10KΩ	½	C-9B1-74	BTS-10K	AGC Keying Grid
R41	2200Ω	½	C-9B1-66	BTS-2200	1st Video Amp. Plate - See Note 6 and 8
R42	1000Ω	½	C-9B1-62	BTS-1000	1st Video Amp. Plate - See Note 9 and 14
R43	43KΩ	2		BTB-47K	Voltage Divider - See Note 10
R44	4700Ω	2	C-9B1-70	BTB-4700	Voltage Divider - See Note 11 and 15
R45	1000Ω	10	C-9B14-1099	1 3/4A-1000	Voltage Divider - Wire Wound
R46	2.2Meg 5%	1		BTA-2.2Meg-5%	2nd Video Amp. Grid
R47	100Ω	½		BTS-100	2nd Video Amp. Cathode
R48	47KΩ	1	C-9B2-82	BTA-47K	Video Peaking Coil Shunt
R49	4700Ω	2	C-9B4-70	BTB-4700	2nd Video Amp. Plate
R50	1200Ω	10	C-9C14-1100	1 3/4A-1200	Voltage Divider - Wire Wound
R51	22KΩ 20%	½	C-9B1-78	BTS-22K	Picture Tube Grid
R52	1Meg	½	C-9B1-98	BTS-1Meg	DC Restorer Diode Load
R53	100KΩ	½	C-9B1-86	BTS-100K	Picture Tube Cathode
R54	1000Ω	½	C-9B1-13	BTS-1000	Acc. Anode Load
R55	68KΩ	½	C-9B1-84	BTS-68K	Voltage Divider
R56	220KΩ 20%	½	C-9B1-90		Sound IF Transformer Shunt
R57	120Ω	½	C-9B1-51	BTS-120	Sound IF Amp. Cathode
R58	2700Ω	½	C-9B1-66	BTS-2700	Sound IF Amp. Decoup
R59	27KΩ	½	C-9B1-79	BTS-27K	De-emphasis
R60	22KΩ	½	C-9B1-78	BTS-22K	Det. Diode Load
R61	47KΩ	½	C-9B1-82	BTS-47K	Tone Compensation
R62	10Meg 20%	½	C-9B1-97	BTA-10Meg	AF Amp. Grid
R63	220KΩ	½	C-9B1-90	BTS-220K	AF Amp. Plate - See Note 2
R64	470KΩ	½	C-9B1-94	BTS-470K	Output Grid
R65	680Ω	1	C-9B2-80	BTA-680	Output Cathode
R66	2.2Meg 5%	1		BTA-2.2Meg-5%	Sync. Amp. Grid
R67	47KΩ	1	C-9B2-82	BTA-47K	Sync. Amp. Plate
R68	4.7Meg	½	C-9B1-106	BTS-4.7Meg	Sync. Sep. Grid
R69	68KΩ	2	C-9B4-84	BTB-68K	Sync. Sep. Plate
R70	8200Ω	½	C-9B1-73	BTS-8200	Voltage Divider
R71	56KΩ	½	C-9B1-83	BTS-56K	Integrator
R72	1.5Meg	½	C-9B1-100	BTS-1.5Meg	Vert. Osc. Grid
R73	220KΩ 5%	½		BTS-220K-5%	Vert. Osc. Plate
R74	3900Ω	½	C-9B1-69	BTS-3900	Vert. Peaking
R75	1Meg	½	C-9B1-98	BTS-1Meg	Vert. Output Grid
R76	1000Ω	½	C-9B1-13	BTS-1000	Vert. Output Cathode
R77	47KΩ	2	C-9B1-82	BTB-47K	Voltage Divider
R78	470KΩ	½	C-9B1-94	BTS-470K	Voltage Divider
R79	220KΩ	½	C-9B1-90	BTS-220K	Voltage Divider
R80	150KΩ	½	C-9B1-88	BTS-150K	Horiz. AFC Disc. Diode Load - See Note 3
R81	150KΩ	½	C-9B1-88	BTS-150K	Horiz. AFC Disc. Diode Load - See Note 3
R82	2.2Meg 5%	½		BTS-2.2Meg-5%	Horiz. AFC Disc. Diode Load
R83	2.2Meg 5%	½		BTS-2.2Meg-5%	Horiz. AFC Disc. Diode Load
R84	68KΩ	½	C-9B1-84	BTS-68K	Horiz. Peaking
R85	1500Ω	½	C-9B1-64	BTS-1500	Horiz. MV Cathode
R86	100KΩ	½	C-9B1-86	BTS-100K	Horiz. MV Grid
R87	5600Ω	1	C-9B2-71	BTA-5600	Horiz. MV Plate
R88	240KΩ 5%	½	C-9B1-54		Horiz. MV Plate -See Note 4
R89	220Ω	½			Parasitic Supp
R90	470KΩ	2	C-9B1-94	BTS-470K	Horiz. Output Grid
R91	4700Ω	2	C-9B4-70	BTB-4700	Horiz. Output Screen - See Note 8
R92	470KΩ	½	C-9B1-94	BTS-470K	Horiz. Feedback - See Note 12
R93	240KΩ 5%	½			Horiz. Feedback - See Note 4 and 13
R94	10Ω	2	C-9B1-38	BW-½-10	Centering Network
R95	2700Ω	5	C-9C12-1104	1 3/4A-2500	Filter - Wire Wound - See Note 11
R96	470KΩ	½	C-9B1-94	BTS-470K	Isolation
R97	47KΩ	½	C-9B1-82	BTS-47K	Differentiator - See Note 5.
R98	2.2Meg	½	C-9B1-102	BTS-2.2Meg	Voltage Divider - See Note 5
R99	1500Ω	½	C-9B1-64	BTS-1500	Horiz. Discharge - See Note 5
R100	5600Ω	1	C-9B2-71	BTA-5600	Voltage Divider - See Note 5
R101	10KΩ	2	C-9B4-74	BTB-10K	Voltage Divider - See Note 5
R102	5600Ω	2	C-9B4-71	BTB-5600	Voltage Divider - See Note 5
R103	2.2Ω	½	C-9C1-1067		HV Rectifier Filament - See Note 5
R104	18KΩ	½	C-9B1-77	BTS-18K	5th Video IF Transformer Shunt - See Note 5

Note 1. Some models use 47KΩ resistor in this application.
Note 2. Some models use 470KΩ resistor in this application.
Note 3. Some models use parallel resistors in this application to obtain desired value.
Note 4. Some models use 220KΩ resistor in this application.
Note 5. Not used in all models.
Note 6. Some models use 4700Ω resistor in this application.
Note 7. Some models use 8200Ω resistor in this application.
Note 8. Some models use 6800Ω resistor in this application.
Note 9. Some models use 3300Ω 1 watt resistor in this application.
Note 10. Some models use 47KΩ or 22KΩ resistor in this application.
Note 11. Some models use 5600Ω resistor in this application.
Note 12. Some models use 680KΩ resistor in this application.
Note 13. Some models use 1Meg resistor in this application.
Note 14. Some models use 1500 1 watt resistor in this application.
Note 15. Some models use 22KΩ resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA CORONADO PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA MERIT PART No.	REPLACEMENT DATA CHICAGO PART No.
T1	117VAC ⑤ 2A	680VCT. .250ADC	5VAC ⑤ 8A	6.3VAC ⑤ 9A SEC. 4. 6.3VAC ④ 1.5A	C-12A-18839			

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA CORONADO PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA MERIT PART No.	REPLACEMENT DATA CHICAGO PART No.	NOTES
T2	180Ω	100Ω	B-12M-18241-1	A-8111 ③	A-3000 ③	TSO-1 ③	Vert. Block Osc. Trans. Horiz. Output Trans.
T3	650Ω	SEC. 1	C-12M-19407-1				
	tap ④ 49Ω	14Ω Tap ④ .3Ω					
		SEC. 2. 11Ω Tap ④ 2.5Ω					
		SEC. 3. 0Ω					
T4	730Ω	9Ω	B-12C19048	A-8112 ③	A-3038	TSO-5	Vert. Output Trans. Horiz. Deflection Coil
T5A	14Ω		B-13M18888	DY-7	MD-1		Vert. Deflection Coil.
B	63Ω						

③ Drill one new mounting hole.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA CORONADO PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA MERIT PART No.	REPLACEMENT DATA CHICAGO PART No.	INSTALLATION NOTES
T6	8KΩ	3.2Ω	45Ω	.8Ω	B12C-18743	A-8114 ③	A-2932	CHO-13 ③	③ Drill one new hole.

SPEAKER

ITEM No.	RATINGS FIELD	RATINGS V. C. IMP.	RATINGS CONE DIA.	REPLACEMENT DATA CORONADO PART No.	REPLACEMENT DATA JENSEN PART No.	REPLACEMENT DATA QUAM PART No.	INSTALLATION NOTES
SP1	PM	3.2Ω	5 7/8"	C-18A-18745	8T-10B Mod. P6-X	6A21	
SP2			9/16"				

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D.C. RESISTANCE	RATINGS INDUCTANCE @ CURRENT 1000 ma	REPLACEMENT DATA CORONADO PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA MERIT PART No.	REPLACEMENT DATA CHICAGO PART No.	INSTALLATION NOTES
L1	.240A	35Ω	1.4 Henries		C-2326	C-2974	TR3100 ①	① Drill one new
L2	.240A	35Ω	1.4 Henries		C-2326 ①	C-2974	TR3300 ①	mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA CORONADO PART No.	REPLACEMENT DATA MEISSNER PART No.	NOTES
L3	Antenna Coil	0Ω	0Ω	B-201-17143		High Band
L4	Antenna Coil	.1Ω	.1Ω			Low Band(Part of L3)
L5	RF Choke	.9Ω		A-16A-17128		
L6	RF Coil Primary	.1Ω		B-13E-17140		High Band
L7	RF Coil Secondary	.1Ω		B-13E-17140		High Band
L8R	RF Coil Primary	.1Ω		B-13E-12046		Low Band
L9	RF Coil Secondary	.1Ω		B-13E-12046		Low Band
L10	Osc. Coil	.1Ω		B-13E-17140		High Band
L11	Osc. Coil	.1Ω		B-13D-12155		Low Band
L12	Conv. Plate Trap	11Ω		A-16A-18025		
L13	1st Video IF	.3Ω		A-13M-18026		
L14	Fil. Choke	.3Ω		A-201-15509		
L15	2nd Video IF	.2Ω		B-201-15612		
L16	3rd Video IF	.2Ω		B-201-15612		
L17	4th Video IF	.2Ω		B-201-15612		
L18	Grid Choice	2.3Ω		A-201-15608		
L19	5th Video IF	.9Ω	.9Ω	B-13B-18784		
L20	Fil. Choke	1.2Ω		A-16A-17937		
L21	Peaking	11Ω		A-16A-17981		
L22A	4.5MC Trap	1.7Ω		A-201-18746		Includes C50
B	4.5MC Trap			A-201-19363		Alternate
L23	Peaking	22Ω		A-16A-19365	19-1923	410 Microhenries
L24A	Peaking	9Ω		A-16A-18685		
B	Peaking			A-16A-19486	19-1922	340 Microhenries Alternate
C	Peaking			A-16A-19366		Alternate
L25A	Peaking	9Ω		A-16A-18685		
B	Peaking			C-9G-11892	19-1923	380 Microhenries Alternate
C	Peaking			A-16A-19367		Alternate
L26	Peaking			A-16A-17190		
L27	Sound IF	3.1Ω		B-13A-18783		
L28A	Ratio Det. Trans.	4.3Ω	.2Ω	B-13M-17273		
B	Ratio Det. Trans.			B-13M-19257		Alternate
L29	Horiz. Freq.	80Ω		A-13D-18943		
L30A	Horiz. Lin.	2Ω	4Ω	A-13M-19320		
B	Horiz. Lin.			A-13M-18962		Alternate
C	Horiz. Lin.			A-13M-18961		Alternate
L31	Horiz. Size	.2Ω		A-13M-18333		

PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			CORONADO PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M2	3AG	.250A	A-46B-18362	A-55F-18024	312.250		

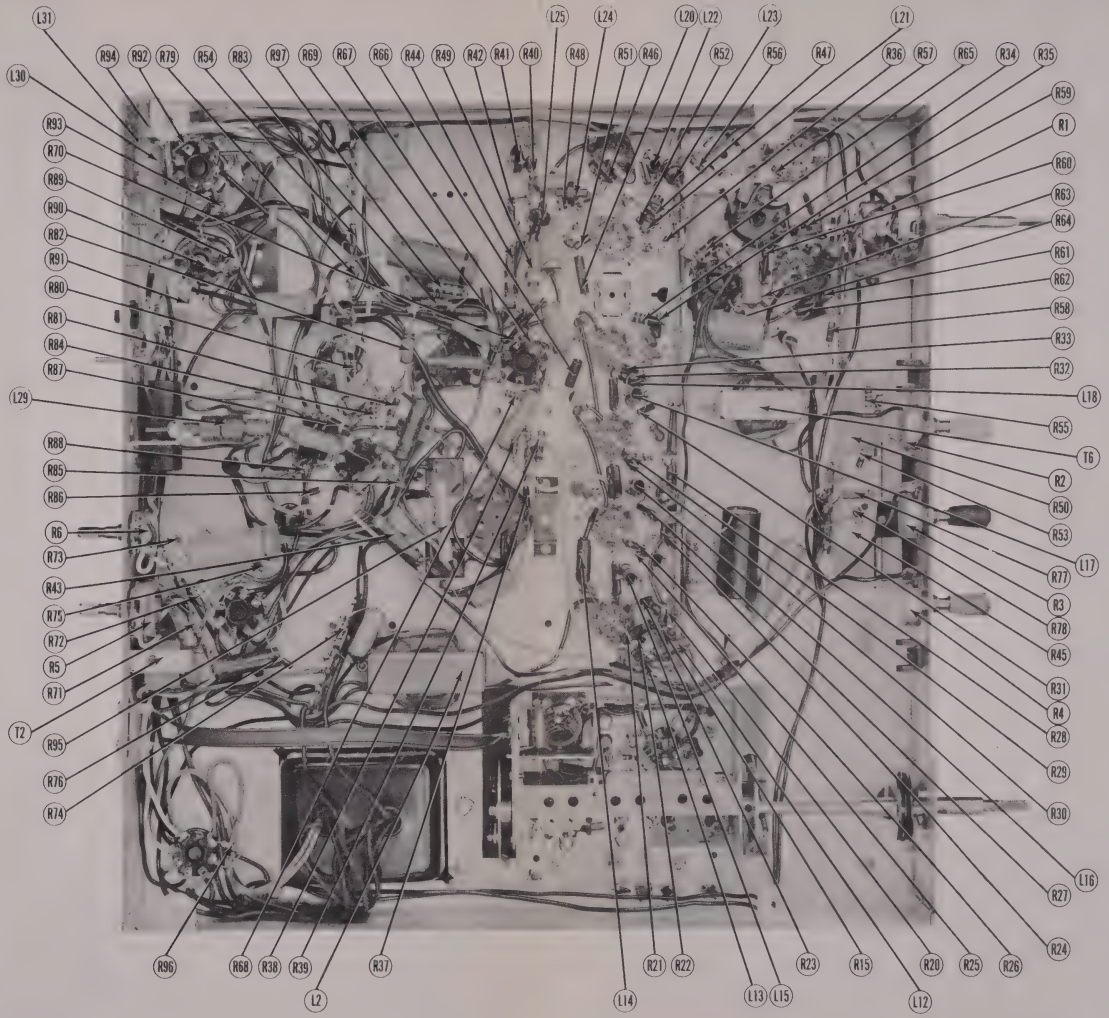
MISCELLANEOUS

ITEM No.	PART NAME	CORONADO PART No.	NOTES
M1	RF Tuner		
M3	Switch	A-20F-12108	Phono Off-On
M4	Focus Magnet	See Chart Below	
M5	Ion Trap	See Chart Below	
	Safety Glass	B-30M-18966	
	Escutcheon	B-2M-18768-2	Channel Selector
	Escutcheon	B-2M-17068-2	Contrast
	Pointer	A-2G-18788	
	Knob	A-5B-18781-76	Tuner
	Knob	B-5B-17761-76	Volume
	Knob	B-5B-17762-76	Contrast
	Knob	B-5B-18244-76	3 used

PICTURE TUBE SUPPLIER INFORMATION

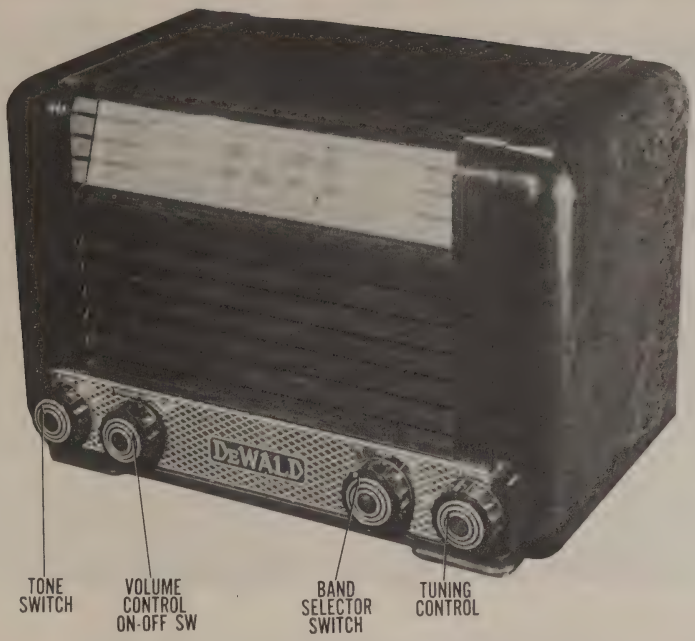
Due to the fact that 16RP4 and 16TP4 picture tubes from various suppliers are not directly interchangeable, different focus magnets and ion traps must be used. A BRC sticker is pasted on the original picture tubes in this chassis. The chart below lists picture tube suppliers and the corresponding focus magnets and ion traps.

SUPPLIER	BRC No.	FOCUS MAGNET	ION TRAP
Raytheon	C-55W-19341	A-55P-19336	B-16M-19337
Sylvania	C-55W-19344	A-55P-19336	B-16M-19343
Martin	C-55W-19345	A-55P-18915	B-15M-18623
Raytheon	C-55W-19362	A-55P-19336	B-16M-18623
Martin	C-55W-19362	A-55P-19336	B-16M-18623
Thomas	C-55W-19426	A-55P-18915	B-16M-19343
Arcturus	C-55W-19345	A-55P-18915	B-16M-19623



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

DEWALD
MODEL E-520



DEWALD
MODEL E-520

DEWALD MODEL E-520

TRADE NAME	Dewald, Model E-520
MANUFACTURER	Dewald Radio Mfg. Co., 35-15 37th Ave., Long Island City, New York
TYPE SET	AC-DC operated 3 Band Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types 12BE6 Converter, 12AW6 or 12BA6 IF Amplifier, 12AT6 Det.-AVC-AF, 50B5 Power Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC — RATING .26 A @ 117VAC
TUNING RANGE—BROADCAST	525-1680KC — SHORT WAVE #1 7.5-24.2MC #2 2.5-8MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning gang fully closed and set the right hand edge of the pointer carriage even with the calibration mark near the left hand end of dial backplate
Use isolation transformer if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	200mmf.	High side to ant. lead. Low side to chassis.	455KC (400Ω mod)	BC (CCW)	Tuning gang fully open	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	200mmf.	"	24.2 MC	SW1 (CW)	"	"	A5	"
3.	200mmf.	"	23MC	"	Tune for max. output.	"	A6	"
4.	200mmf.	"	8MC	SW2 (center)	Tuning gang fully open.	"	A7	"
5.	200mmf.	"	7MC	"	Tune for max. output.	"	A8	"
6.	200mmf.	"	1680KC	BC (CCW)	Tuning gang fully open.	"	A9	"
7.	200mmf.	"	525KC	"	Tuning gang fully closed.	"	A10	" Repeat steps 6 & 7 until no further improvement can be made.

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PARTS LIST AND DESCRIPTIONS

DEWALD MODEL E-520

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: DEWALD PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	12BE6	12BE6	7CH	
V2A	IF Amplifier	12AW6	12AW6	7CM	
V2B	IF Amplifier	12BA6	12BA6	7BK	
V3	Det. -AVC-AF	12AT6	12AT6	7BT	
V4	Power Output	50B5	50B5	7BZ	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: DEWALD PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	50	150		E3C237		UP55515		TVL-3442	■ Filter †
B	50	150							▲ Filter †
C	50	150							Output Cath. †
C2	.002	600		P688-002	D6-202	PTE6D2	GP2M-002	6TM-D2	Ant. Coupling
C3	.05	400		P488-05	DF-503	PTE4S5		4TM-S5	AVC Filter
C4	47	500		1468-00005	D6-470	5W5Q5	GP1K-47	1FM-45	Osc. Grid Cap
C5	1850								Fixed Padder
C6	3300			SI3300	D6-332		GP2M-0033	36C12	Fixed Padder
C7	.05	400		P488-05	DF-503	PTE4S5		4TM-S5	RF Bypass
C8	220			SI220	D6-221	5W5T25	GP2K-220	19C13	Diode RF Filter
C9	.01	400		P488-01	D6-103	PTE4S1	821-01	4TM-S1	Audio Coupling
C10	220			SI220	D6-221	5W5T25	GP2K-220	19C13	AF Amp. Plate
C11	.01	400		P488-01	D6-103	PTE4S1	821-01	4TM-S1	Audio Coupling
C12	.003	600		P688-003	D6-302	PTE6D3	GP2M-003	6TM-D3	Tone Comp.
C13	.02	400		P488-02	DF-203	PTE4S2		4TM-S2	Output Plate
C14	.05	400		P488-05	DF-503	PTE4S5		4TM-S5	Line Filter
C15	10			SI10	D6-100	5W5Q1	GP1K-10	19C3	Fixed Trimmer *

† Some models use 80-40-20 MFD./150-150-25 Volts in this application.
* Not used in all models

CONTROLS

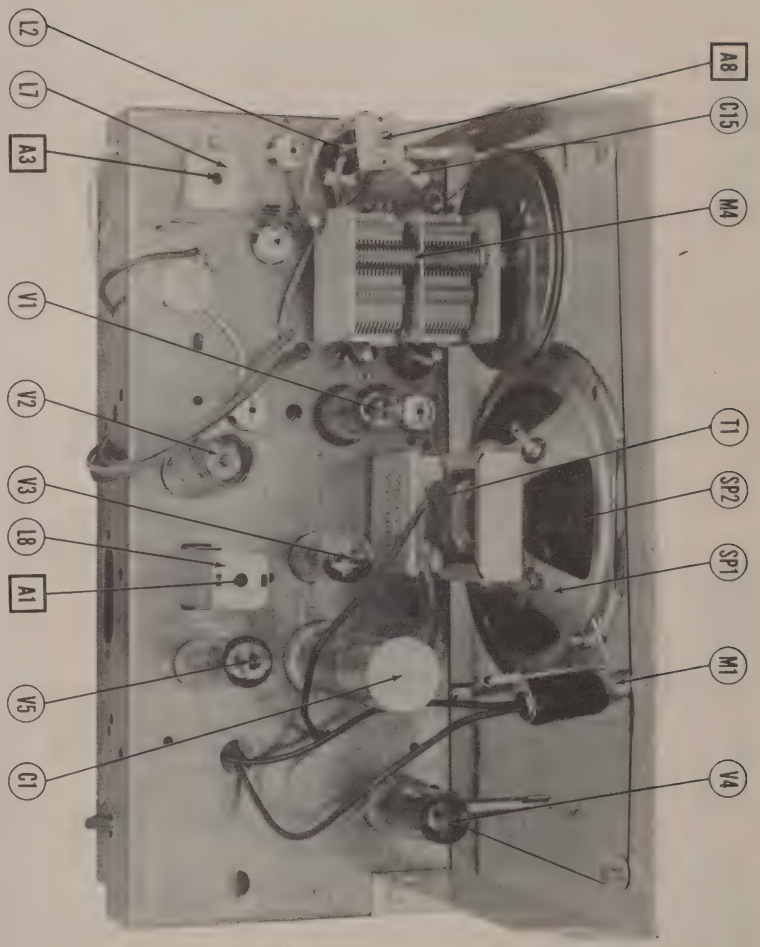
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: DEWALD PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	500KΩ	½	3013-4	Q13-133	AM-60-Z	BSK-60-S	Volume Control
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach to R1A Per Instructions
C	Switch		Not Req.	76-1	SWB	Not Req.	Attach to R1A Per Instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: DEWALD PART No.	IRC PART No.	IDENTIFICATION CODES
R2	12Ω	½			Parasitic Suppressor - See Note 1
R3	22KΩ	½			Osc. Grid
R4	560Ω	1		BTA-560	Antenna Coil Shunt - See Note 1
R5	10000Ω	1		BTA-1000	Antenna Coil Shunt - See Note 1
R6	2.7Meg	½		BTS-2.7Meg	AVC Network - See Note 2
R7	4.7Meg	½		BTS-4.7Meg	AF Amp. Grid
R8	560KΩ	½		BTS-560K	AF Amp. Plate - See Note 3
R9	560KΩ	½		BTS-560K	Output Grid - See Note 3
R10	150Ω	½		BTS-150	Output Cathode
R11	1500Ω	1		BTA-1500	Filter
R12	10Ω	½			Rectifier Ballast
R13	220Ω	½		BTS-220	IF Amp. Cathode - See Note 1

Note 1 Not used in all models
Note 2 Some models use 2.2 Meg Resistor in this application
Note 3 Some models use 470KΩ Resistor in this application

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		DEWALD PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	2.5KΩ	4Ω	335Ω	.6Ω		A-3876 ①	A-3025 ①	RO-2 ①	① Bend mounting tabs down file out slots and mount on original bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			DEWALD PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V. C. IMP.		ST105 ②	5A1 ②	② Use universal mounting bracket
SP1	PM	4Ω		Mod P5-X		
	CONE DIA.	V. C. DIA.				
SP2	4 13/16	5"				

R F COILS

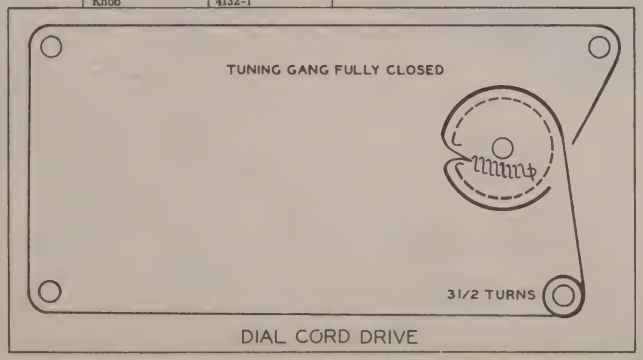
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	DEWALD PART No.	MEISSNER PART No.	
L1	Loop Ant.	.1Ω	4.2Ω			525-1680KC
L2	Ant. Coil	.7Ω	.3Ω	1094-2		2.5-8MC
L3	Ant. Coil	.1Ω	.1Ω	1094-1		7.5-24.2MC
L4	Osc. Coil	5.5Ω		1093A		525-1680KC
L5	Osc. Coil	.3Ω		1095-2		2.5-8MC
L6	Osc. Coil	.1Ω		1095-1		7.5-24.2MC
L7	1st IF	19Ω	24Ω	1091B-4		
L8	2nd IF	9Ω	9Ω	1091B-1		

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					DEWALD PART No.		
M1	Bayonet	6-8	.15	Brown			Type Number 47

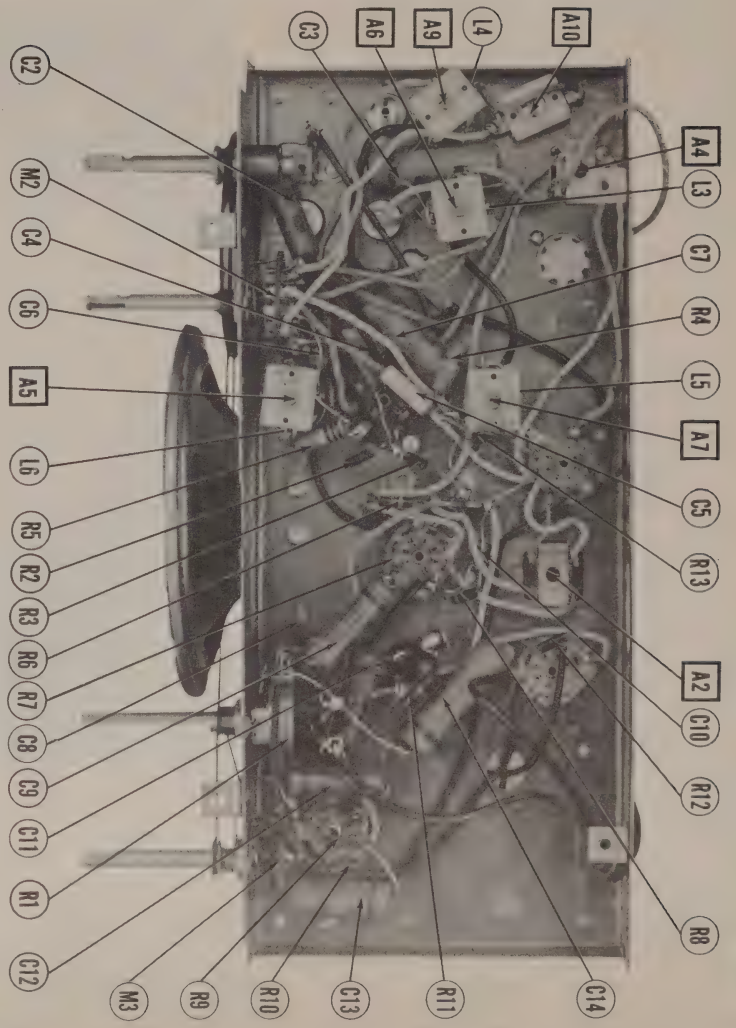
MISCELLANEOUS

ITEM No.	PART NAME	DEWALD PART No.	NOTES
M2	Switch	8017-B-4	Band
M3	Switch	8043-2	Tone
M4	2 Gang Var. Cap.	2014-4	(14-445 MMF, 14-445MMF)
	Dial Scale	6022A-2	
	Cabinet	4093-C	
	Knob	4132-1	



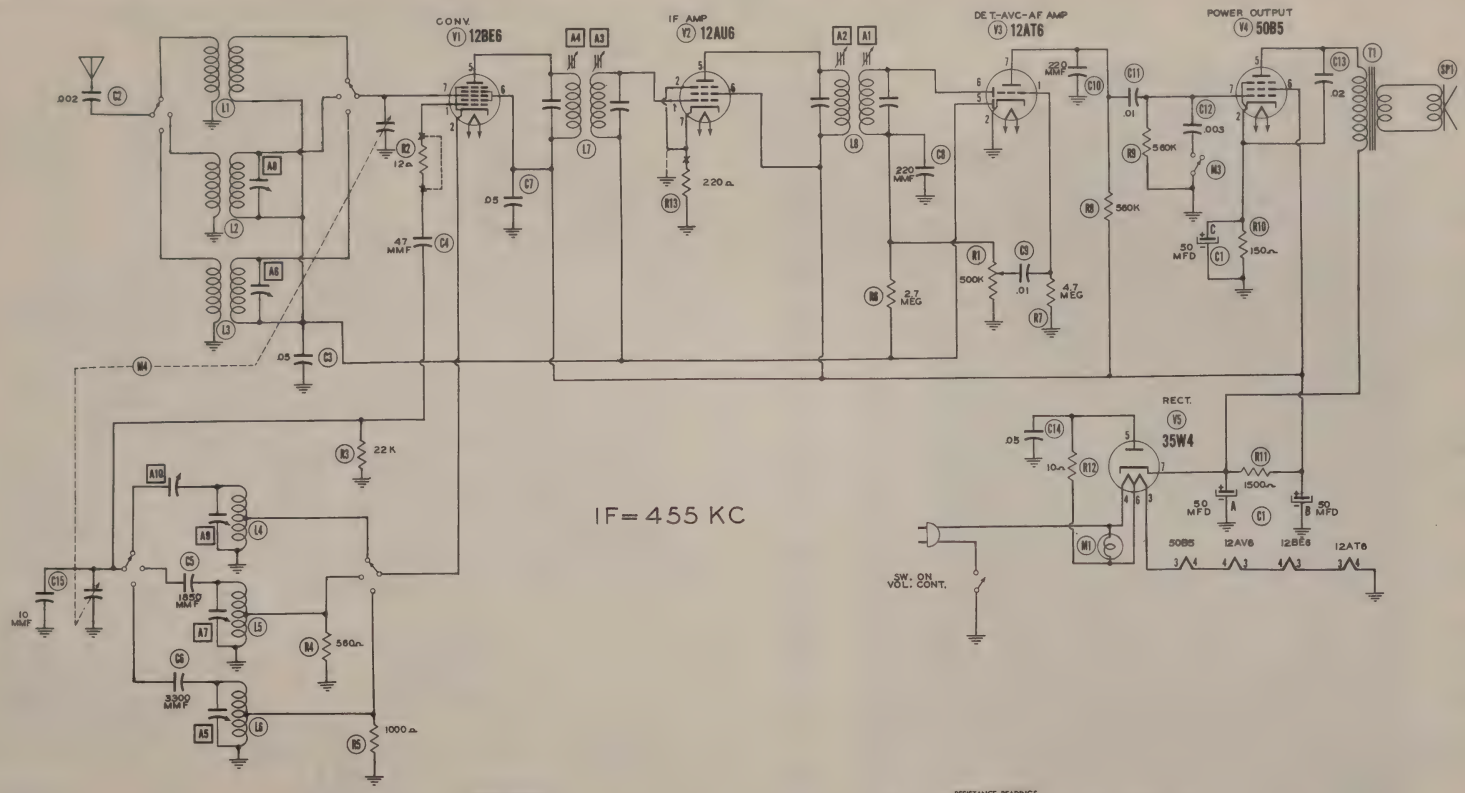
DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



SET 128 FOLDER 5

DEWALD MODEL B-520



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	8-4.6VDC	0V	12VAC	25VAC	90VDC	90VDC	-.2VDC
V 2	12AW6	-.4VDC	.8VDC	25VAC	37VAC	90VDC	90VDC	.8VDC
V 3	12AT7	-.8VDC	0V	12VAC	0V	-.4VDC	-.4VDC	40VDC
V 4	50B5	.1VDC	6.2VDC	85VAC	37VAC	100VDC	90VDC	.1VDC
V 5	35W4	Inf.	Inf.	85VAC	117VAC	108VAC	110VAC	115VDC

‡ TAKEN WITH VACUUM TUBE VOLTMETER V & R TAKEN IN STANDARD BROADCAST.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	.5Ω	13Ω	26Ω	†1.5KΩ	†1.5KΩ	3.2Meg
V 2	12AW6	3.2Meg	220Ω	26Ω	38Ω	†1.5KΩ	†1.5KΩ	220Ω
V 3	12AT6	4.7Meg	0Ω	13Ω	0Ω	3.2Meg	500KΩ	†560KΩ
V 4	50C5	560Ω	150Ω	90Ω	38Ω	†335Ω	†1.5KΩ	560KΩ
V 5	35W4	Inf.	Inf.	90Ω	120Ω	125Ω	118Ω	50KΩ

† MEASURED FROM PIN 7 OF V5

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

EMERSON MODELS
676B, 680D, 681B, 686D (CH. 120140B)

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MODEL 680D

EMERSON MODELS
676B, 680D, 681B, 686D (CH. 120140B)

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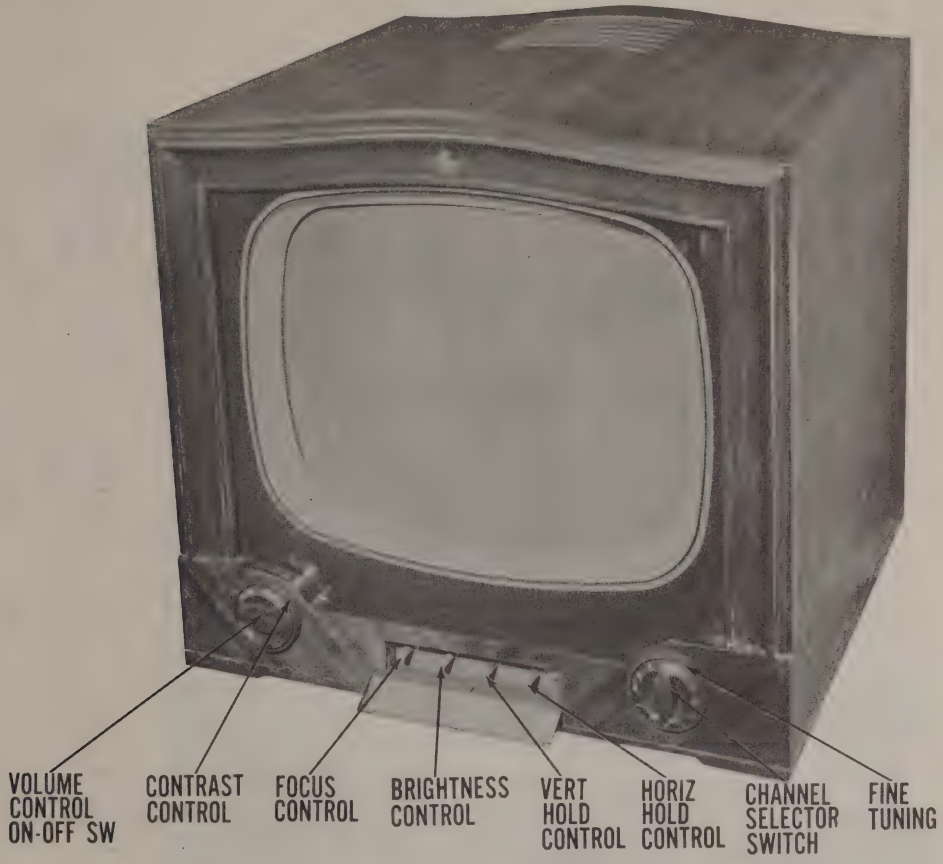

EMERSON MODELS 676B, 680D, 681B, 686D (Ch. 120140B)

EMERSON MODEL 680D

TRADE NAME	Emerson, Models 676B, 680D, 681B, 686D (Ch. 120140B)
MANUFACTURER	Emerson Radio and Phono Corp., 111 Eighth Ave., New York 11, New York
TYPE SET	Television Receiver
TUBES	Twenty Three
POWER SUPPLY	110-120 Volts AC-60 Cycle — RATING 1.82 Amp. @ 117 Volts AC
TUNING RANGE—	Channels 2 thru 13

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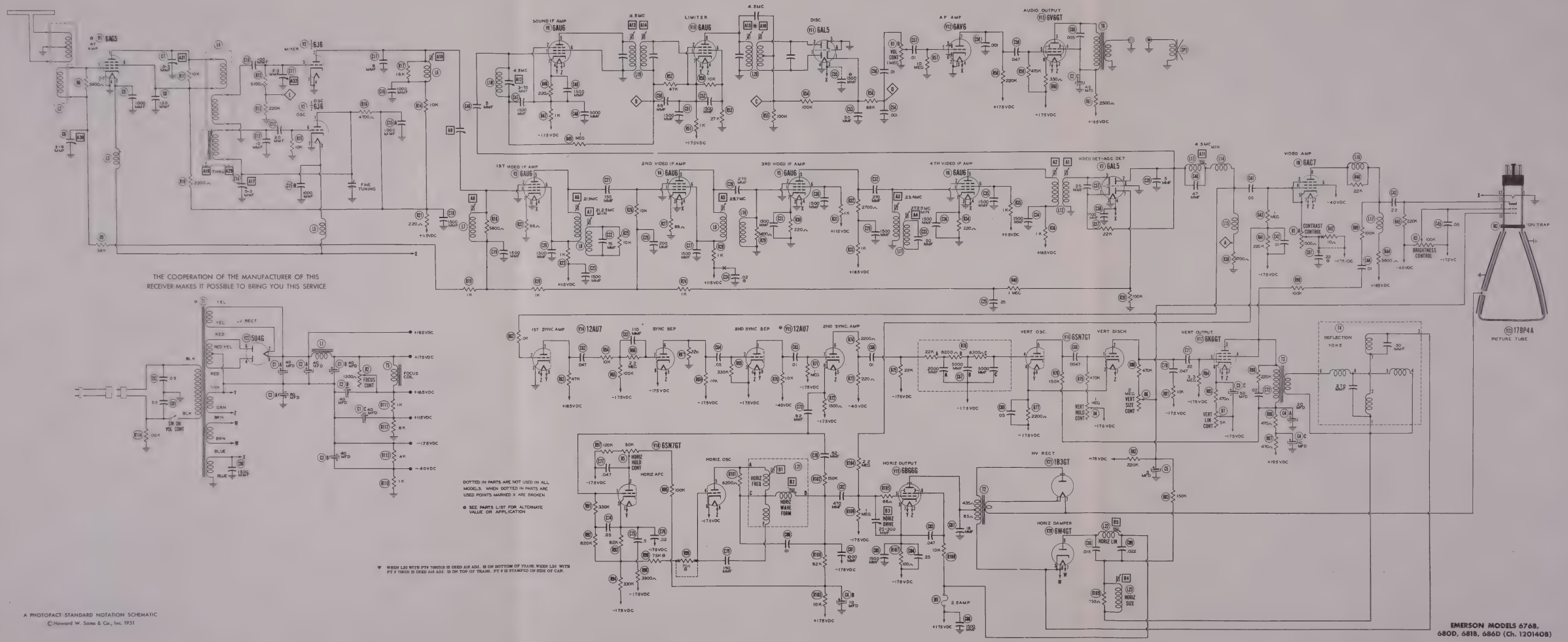
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DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN
⊕ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
* WHEN L30 WITH PT# 726031B IS USED A16 ADJ. IS ON BOTTOM OF TRANS. WHEN L30 WITH PT # 726031 IS USED A16 ADJ. IS ON TOP OF TRANS. PT # IS STAMPED ON SIDE OF CAN.
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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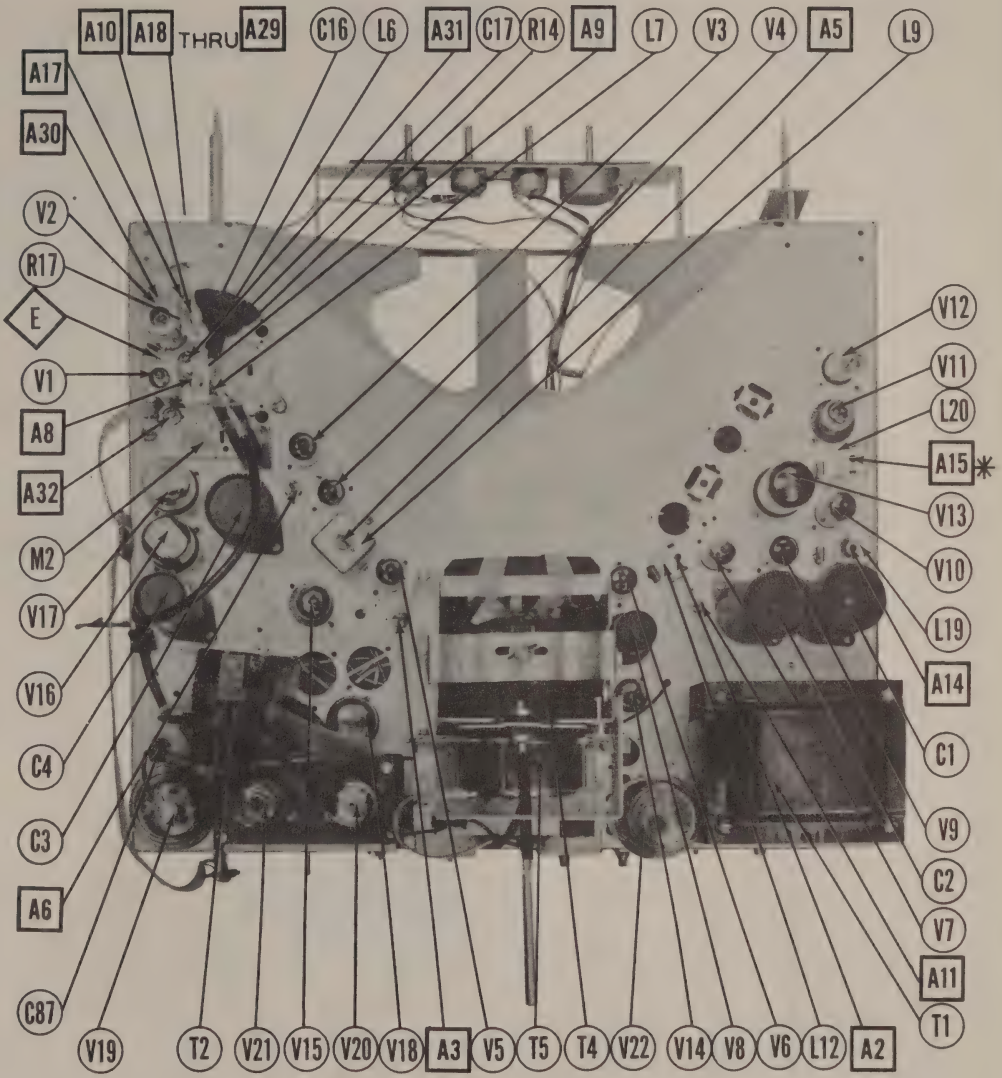
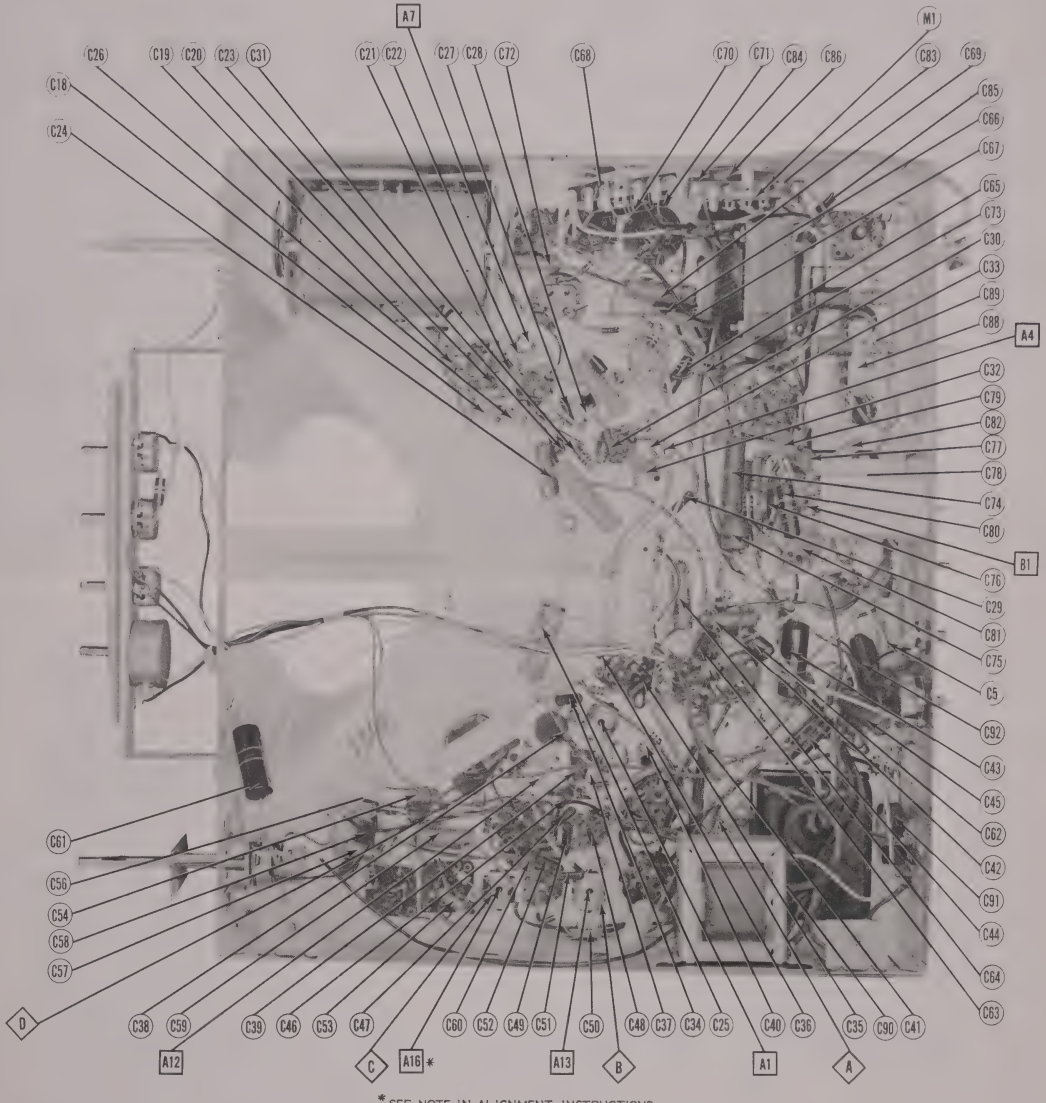
EMERSON MODELS 676B, 680D, 681B, 686D (Ch. 1201408)

EMERSON MODELS 676B, 680D, 681B, 686D (Ch. 1201408)



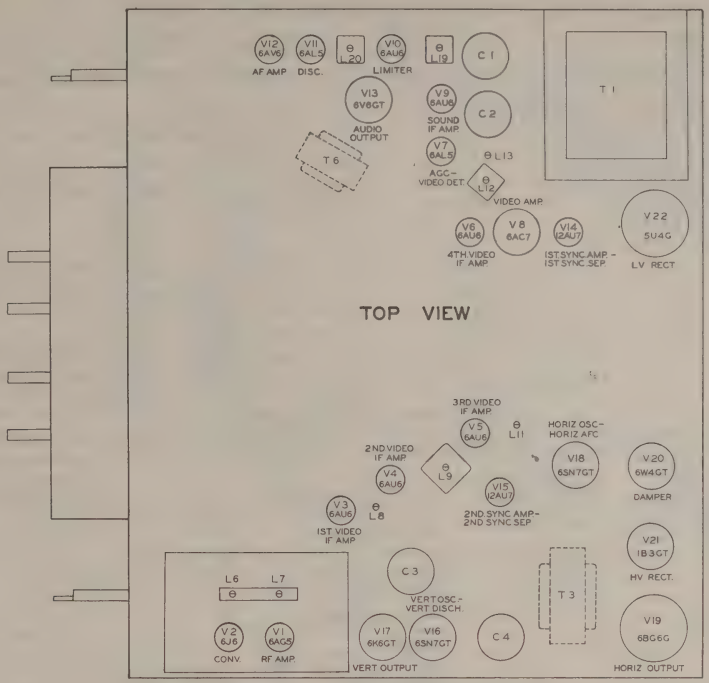
* SEE NOTE IN ALIGNMENT INSTRUCTIONS

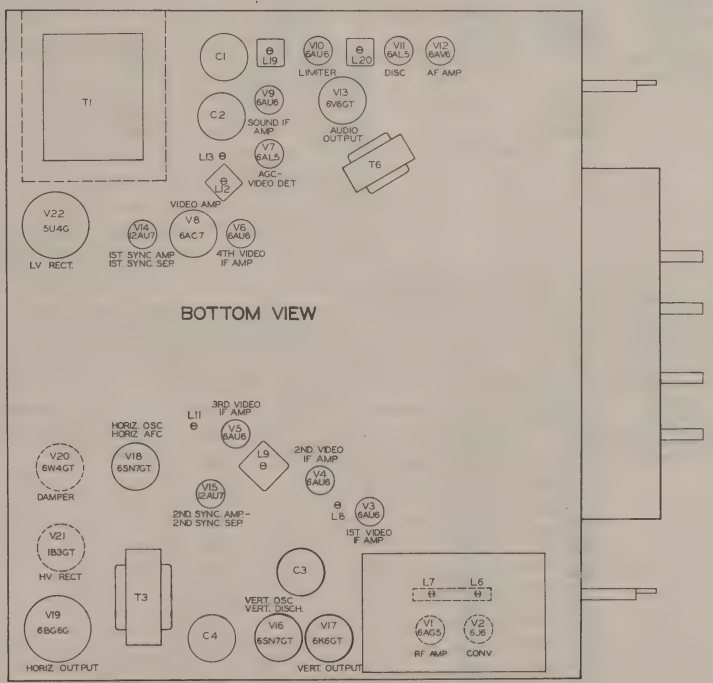
CHASSIS TOP VIEW



*SEE NOTE IN ALIGNMENT INSTRUCTIONS

CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION





TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard may be eliminated by removing the horizontal oscillator tube (V18) from its socket.

VIDEO IF ALIGNMENT

Remove the converter tube (V2) and replace it with a 6J6 which has pin 1 removed. This will prevent the possibility of erroneous indications caused by the local oscillator.

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.001MFD	High side to pin 1 (grid) of 6AU6 (V6). Low side to chassis.	23.5MC (10MC SWP)	21.9MC 25.75MC	Any	Vert. amp. to Point (A). Low side to chassis.	A1, A2	Adjust for response curve similar to fig. 1.
2.	Direct	High side to an ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	Not used	23.6MC (Unmod.)	"	USE VTVM DC probe to Point (A). Common to chassis.	A3	Adjust for maximum deflection.
3.	"	"	"	27.25MC	"	"	A4	Adjust for MINIMUM deflection.
4.	"	"	"	25.7MC	"	"	A5	Adjust for maximum deflection.
5.	"	"	"	21.9MC	"	"	A6	"
6.	"	"	"	21.25MC	"	"	A7	Adjust for MINIMUM deflection.
7.	"	"	23.5MC (10MC SWP)	21.25MC 21.9MC 25.75MC	"	Vert. amp. to Point (A). Low side to chassis.	A8, A9, A10	Adjust for response curve similar to fig. 2. If necessary retouch A3, A5, and A6 for proper response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

The secondary of the discriminator transformer, (A16), is on the top of transformer #708031B, and on the bottom of transformer #708031. Determine which transformer is in the set being aligned and proceed accordingly. The part number is on the side of the can.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
8.	.001MFD	High side to pin 5 (cathode) of 6AL5 (V7). Low side to chassis.	4.5MC (400 ∿ Mod.)	Any	DC probe thru detector (figure 3), to pin 11 of picture tube. Common to chassis.	A 11	Adjust for MINIMUM deflection.
9.	"	"	4.5MC (Unmod.)	"	DC probe to Point (B). Common to chassis.	A12, A13, A14	Adjust for maximum deflection.
10.	"	"	"	"	DC probe thru 100KΩ to Point (C). Common to chassis.	A15	"
11.	"	"	"	"	DC probe to Point (D). Common to chassis.	A16	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection. See note under VTVM alignment.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	.001MFD	High side to pin 5 (Cathode) of 6AL5 (V7). Low side to chassis.	Not used	4.5MC (400 ∿ Mod.)	Any	Vert. amp. thru detector (fig. 3) to pin 11 of picture tube. Low side to chassis.	A 11	Adjust for MINIMUM 400 ∿ indication of scope.
9.	"	"	4.5MC (450KC SWP)	"	"	Vert. amp. to Point (B). Low side to chassis.	A12, A13, A14	Adjust for maximum amplitude and symmetry as per figure 4.
10.	"	"	"	"	"	Vert. amp. to Point (C). Low side to chassis.	A15	"
11.	"	"	"	"	"	Vert. amp. to Point (D). Low side to chassis.	A16	Adjust A16 so 4.5MC occurs at center of crossover lines as per figure 5. SLIGHTLY retouch A15 for amximum amplitude and straightness of crossover lines.

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.

Complete oscillator alignment may not be necessary. If the oscillator seems to be off frequency approximately the same amount for a majority of the channels it may be possible to correct them in one step using A17. It should be noted that this is an all channel oscillator circuit adjustment and should not be adjusted for any individual channel. If adjustment of A17 will not bring all channels well within the range of the fine tuning control, it will be necessary to adjust the channel strip adjustment for each channel that is off frequency. The channel strip adjustments are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.

The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
12.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC SWP)	211.25MC 215.75MC	13	Vert. amp. to Point (A). Low side to chassis.	A18	Adjust to place sound marker in "notch" as per figure 6.
			207MC (10MC SWP)	205.25MC 209.75MC	12		A19	
			201MC (10MC SWP)	199.25MC 203.75MC	11		A20	
			195MC (10MC SWP)	193.25MC 197.75MC	10		A21	
			189MC (10MC SWP)	187.25MC 191.75MC	9		A22	
			183MC (10MC SWP)	181.25MC 185.75MC	8		A23	
			177MC (10MC SWP)	175.25MC 179.75MC	7		A24	
			85MC (10MC SWP)	83.25MC 87.75MC	6		A25	
			79MC (10MC SWP)	77.25MC 81.75MC	5		A26	
			69MC (10MC SWP)	67.25MC 71.75MC	4		A27	
			63MC (10MC SWP)	61.25MC 65.75MC	3		A28	
			57MC (10MC SWP)	55.25MC 59.75MC	2		A29	

ALIGNMENT INSTRUCTIONS (CONT.)

RF ALIGNMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
13.	Two 120Ω carbon resistors	Across 'enna terminals with 120Ω in each lead.	207MC (10MC SWP)	205.25MC 209.75MC	12	Vert. amp. thru 10KΩ to Point (E) Low side to chassis.	A30, A31, A32	Adjust for response curve similar to fig. 7. with markers above 90%.
14.	"	"	213MC (10MC SWP)	211.25MC 215.75MC	13	"		Check all channels for response curve similar to figure 7. If markers fall below 70% on any channel, make slight adjustment of A30, A31 and A32 with channels switch set for that channel. Recheck all channels to see that they have not been seriously effected.
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			177MC (10MC SWP)	175.25MC 179.75MC	7			
			85MC (10MC SWP)	83.25MC 87.75MC	6			
			79MC (10MC SWP)	77.25MC 81.75MC	5			
			69MC (10MC SWP)	67.25MC 71.75MC	4			
			63MC (10MC SWP)	61.25MC 65.75MC	3			
			57MC (10MC SWP)	55.25MC 59.75MC	2			

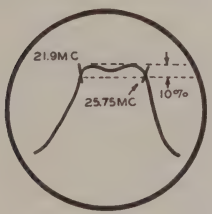


FIG.1

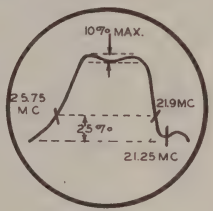


FIG.2

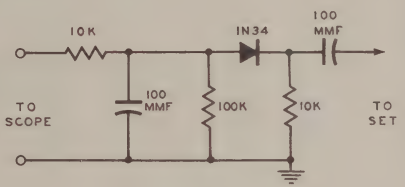


FIG. 3

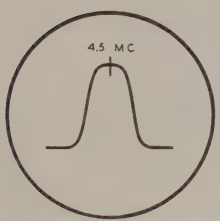


FIG. 4

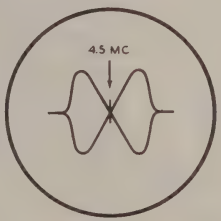


FIG. 5

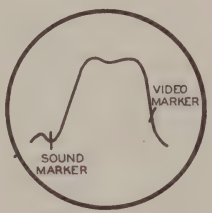


FIG.6

FIG.7

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	-.6VDC	0V	6.3VAC	0V	90VDC	90VDC	0V		
V 2	6J6	85VDC	80VDC	6.3VAC	0V	-3VDC	§-5.4VDC	0V		
V 3	6AU6	-.5VDC	0V	0V	6.3VAC	105VDC	105VDC	.4VDC		
V 4	6AU6	-.5VDC	0V	0V	6.3VAC	105VDC	105VDC	.4VDC		
V 5	6AU6	0V	0V	0V	6.3VAC	145VDC	110VDC	1.4VDC		
V 6	6AU6	0V	0V	0V	6.3VAC	150VDC	110VDC	1.4VDC		
V 7	6AL5	-.1VDC	-.4VDC	0V	6.3VAC	0V	0V	-.8VDC		
V 8	6AC7	0V	#6.3VAC	#1.2VDC	#-2VDC	#1.2VDC	#135VDC	#0V	‡335VDC	
V 9	6AU6	#1.3VDC	#7.4VDC	#6.3VAC	#0V	#175VDC	#175VDC	#9VDC		
V 10	6AU6	#5.3VDC	#7VDC	#0V	#6.3VAC	#175VDC	#50VDC	#7VDC		
V 11	6AL5	-.1VDC	-.4VDC	6.3VAC	0V	0V	0V	-.4VDC		
V 12	6AV6	-.6VDC	0V	0V	6.3VAC	0V	0V	90VDC		
V 13	6V6GT	0V	#6.3VAC	#230VDC	#240VDC	#0V	#0V	#0V	#13VDC	
V 14	12AU7	35VDC	-.5VDC	0V	#6.3VAC	#6.3VAC	#55VDC	#-1.2VDC	#0V	#0V
V 15	12AU7	#100VDC	#-3.9VDC	#0V	#6.3VAC	#6.3VAC	#125VDC	#-6.6VDC	#4.3VDC	#0V
V 16	6SN7GT	#-18VDC #-45VDC	#190VDC #65VDC	#5.4VDC #4.4VDC	#0V	#165VDC	#5.4VDC #4.4VDC	#6.3VAC	#0V	
V 17	6K6GT	0V	#6.3VAC	#360VDC #300VDC	#360VDC #300VDC	#0V	#360VDC #300VDC	#0V	#50VDC #18VDC	
V 18	6SN7GT	#-2.6VDC	#185VDC #130VDC	#-4VDC #-12VDC	#-60VDC	#175VDC	#0V	#0V	#6.3VAC	
V 19	6BG6G	0V	#6.3VAC	#10VDC	#-18VDC	#-18VDC	#-1VDC	#0V	#275VDC	TOP CAP •
V 20	6W4GT	0V	0V	460VDC	0V	170VDC	0V	460VDC	460VDC	
V 21	1B3GT	• DO NOT MEASURE								
V 22	5U4G	0V	195VDC	0V	185VAC	0V	185VAC	0V	195VDC	
V 23	17BP4A	0V	#135VDC #0V	PIN 10 # 480VDC	PIN 11 #130VDC	PIN 12 6.3VAC				

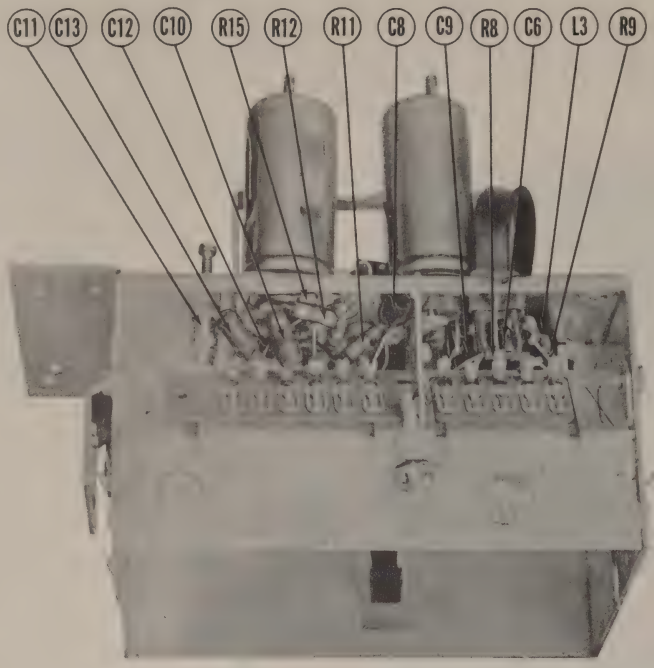
FOCUS CONTROL COUNTER CLOCKWISE
§ TAKEN WITH VACUUM TUBE VOLTMETER
# MEASURED FROM -175VDC POINT
• DO NOT MEASURE

RESISTANCE READINGS

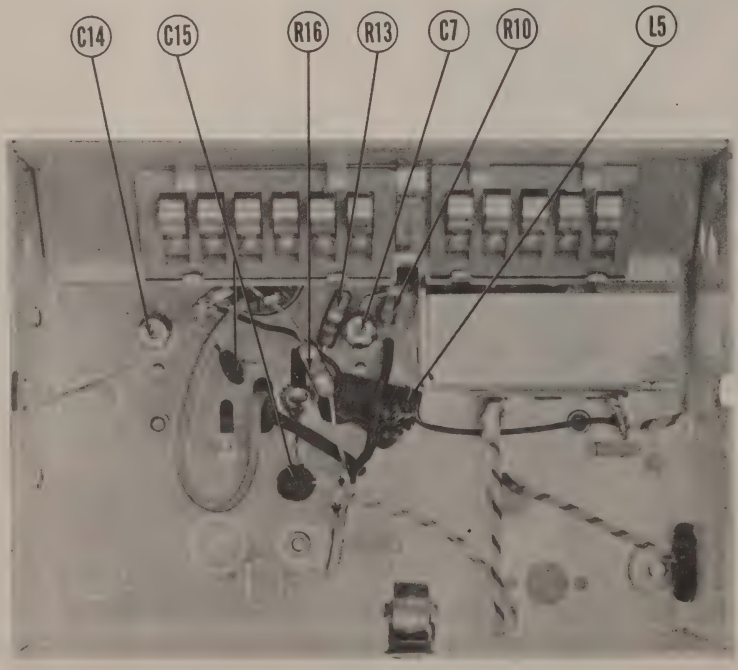
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	1.1Meg	0Ω	.1Ω	0Ω	†3.5KΩ	†3.5KΩ	0Ω		
V 2	6J6	†6KΩ	†11KΩ	.1Ω	0Ω	225KΩ	10KΩ	0Ω		
V 3	6AU6	1.1Meg	0Ω	0Ω	.1Ω	†2.1KΩ	†2.1KΩ	68Ω		
V 4	6AU6	1.1Meg	0Ω	0Ω	.1Ω	†2.1KΩ	†2.1KΩ	68Ω		
V 5	6AU6	2.7Ω	0Ω	0Ω	.1Ω	†3.8KΩ	†2.1KΩ	220Ω		
V 6	6AU6	.2Ω	0Ω	0Ω	.1Ω	†1.1KΩ	†2.1KΩ	220Ω		
V 7	6AL5	27KΩ	4.7KΩ	0Ω	.1Ω	.7Ω	0Ω	100KΩ		
V 8	6AC7	0Ω	#.1Ω	#1.5KΩ	#1.2Meg	#1.5KΩ	#3KΩ	#0Ω	†5.7KΩ	
V 9	6AU6	#1Meg	#1KΩ	#.1Ω	#0Ω	1.6Ω	0Ω	#1.2KΩ		
V 10	6AU6	#48KΩ	#1KΩ	#0Ω	#.1Ω	1.7Ω	10KΩ	#1KΩ		
V 11	6AL5	200KΩ	100KΩ	.1Ω	0Ω	0Ω	0Ω	100KΩ		
V 12	6AV6	10Meg	0Ω	0Ω	.1Ω	Inf.	Inf.	†220KΩ		
V 13	6V6GT	Inf.	#.1Ω	†2.9KΩ	†2.6KΩ	#470KΩ	#0Ω	#0V	#330Ω	
V 14	12AU7	†47KΩ	15KΩ	0Ω	#.1Ω	#.1Ω	9KΩ	#2.3Meg	#0Ω	#0Ω
V 15	12AU7	#14KΩ	#330KΩ	#0Ω	#.1Ω	#.1Ω	#5.5KΩ	#1Meg	#1.5KΩ	#0Ω
V 16	6SN7GT	#470KΩ #1.5Meg	†700KΩ †2.7Meg	#2.2KΩ	#60KΩ	†150KΩ	#2.2KΩ	#.1Ω	#0Ω	
V 17	6K6GT	Inf.	#.1Ω	†1.4KΩ	†1.4KΩ	#3.3Meg	†220KΩ	#0Ω	#5.5KΩ #470KΩ	
V 18	6SN7GT	#1.5Meg	†70KΩ †80KΩ	#410KΩ	#480KΩ	†90KΩ	#0Ω	#0Ω	#.1Ω	
V 19	6BG6G	Inf.	#.1Ω	#100Ω	#750KΩ	#750KΩ	#220KΩ	#0Ω	†10KΩ	TOP CAP ▲85Ω
V 20	6W4GT	Inf.	Inf.	330KΩ	Inf.	†140Ω	Inf.	▲0Ω	▲.2Ω	
V 21	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP ▲520Ω
V 22	5U4G	Inf.	8KΩ	Inf.	4KΩ	Inf.	4KΩ	Inf.	8KΩ	
V 23	17BP4A	0Ω	#30KΩ #0Ω	PIN 10 †220KΩ	PIN 11 #220KΩ	PIN 12 .1Ω				

FOCUS CONTROL COUNTER CLOCKWISE
† MEASURED FROM PIN 8 OF V 22
# MEASURED FROM -175VDC POINT
▲ MEASURED FROM PIN 3 OF V 20

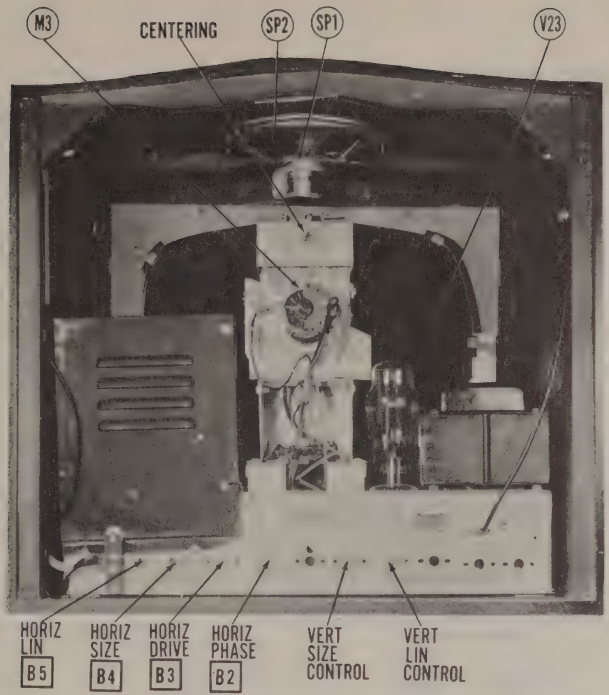
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Connect a short across terminal C and D of L21.

Turn the horioztal hold control to maximum clockwise.

Starting with the slug fully out, turn the horizontal frequency slug, (B1),in until the picture synchronizes horizontally.

Remove the short from L21 and connect the vertical input of an oscilloscope through a 22KΩ decoupling resistor to terminal C.

Adjust the phasing slug (B2) until the broad and narrow peaks of the waveform on the scope of equal height as shown in figure 8. If necessary during adjustment of B2, adjust B1 to keep the picture synchronized.

Switch to another channel and back again. The picture should be out of sync and show 4 or 5 sloping bars.

If more than 5 or less than 4 bars are present adjust B1 and repeat the check.

Turn the hold control counter-clockwise, the picture should synchronize after 1/4 turn and remain in sync over the entire range of the hold control.

Adjust the horioztal drive trimmer B3 for best compromise between brightness and horizontal linearity.

Adjust the horizontal size slug (B4) until picture is of proper width.

Adjust the horizontal linearity slug (B5) until the picture is symmetrical from left to right. Slight readjustment of B3 may be required for optimum results.

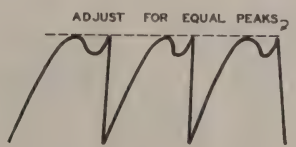


FIG. 8

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: EMERSON PART No.	STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1A	RF Amplifier	6AG5	6AG5	7BD	
B	RF Amplifier	6BC5	6BC5	7BD	
C	RF Amplifier	6CB6	6CB6	6CK	
V2	Converter	6J6	6J6	7BF	
V3	1st Video IF Amp.	6AU6	6AU6	7BK	
V4	2nd Video IF Amp.	6AU6	6AU6	7BK	
V5	3rd Video IF Amp.	6AU6	6AU6	7BK	
V6	4th Video IF Amp.	6AU6	6AU6	7BK	
V7	Video Detector - AGC Detector	6AL5	6AL5	6BT	
V8	Video Amplifier	6AC7	6AC7	8N	
V9	Sound IF Amp.	6AU6	6AU6	7BK	
V10	Limiter	6AU6	6AU6	7BK	
V11	Discriminator	6AL5	6AL5	6BT	
V12	AF Amplifier	6AV6	6AV6	7BT	
V13	Audio Output	6V6GT	6V6GT	7AC	
V14	1st Sync. Amp. - 1st Sync. Separator	12AU7	12AU7	9A	
V15A	2nd Sync. Sep. - 2nd Sync. Amplifier	12AU7	12AU7	9A	
B	2nd Sync. Sep. - 2nd Sync. Amplifier	6SN7	6SN7	8BD	
V16	Vert. Oscillator - Vert. Discharge	6SN7	6SN7	8BD	
V17	Vert. Output	6K6GT	6K6GT	7S	
V18	Horiz. -AFC-Horiz. Oscillator	6SN7GT	6SN7GT	8BD	
V19	Horiz. Output	6BG6G	6BG6G	5BT	
V20	Horiz. Damper	6W4GT	6W4GT	4CG	
V21	H. V. Rectifier	1B3GT	1B3GT	3C	
V22	L. V. Rectifier	5U4G	5U4G	5T	
V23	Picture Tube	17BP4A	12D		

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	VOLT	REPLACEMENT DATA: EMERSON PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	450	925148	AFH888J		UPT44445		TVL-3787	■ Filter
B	40	450							■ Filter
C	40	450							▲ Filter
C2A	40	450	925148	AFH888J		UPT44445		TVL-3787	▲ Filter
B	40	450							■ Filter
C	40	450							▲ Output Decoupling
C3A	80	250	925149	AFH616I62F		UPT825-415V5		TVL-3525	▲ Filter
B	60	150							■ Decoupling
C	50	50							▲ Vert. Output Cath. Bypass
C4A	20	450	925184	AFB333J		UP21145		TVL-3778	■ Decoupling
B	10	450							▲ Decoupling
C	10	450							Filter
C5	5	450	925185	PRS450/4		BR445		TVA-1702	Decoupling
C6	3-9				829-3				Variable Trimmer
C7	.5-3			SI120	D5-121		GP2K-120	19C29	Variable Trimmer
C8	120			BPD-001	DD-102		801-001	19C1	Variable Trimmer
C9	100			SI100N750	TCN-100		N750L-100	29C16	Variable Trimmer
C10	100				829-3				RF Amp. Dec.
C11	.5-3			SI20NPO	TCZ-20		NPOK-20		RF Amp. Fil.
C12	20			SI10N750	TCN-10		N750K-10	19C4	RF Coupling
C13	10				829-3				Fixed Trimmer
C14	.5-3				BPD-2X001	DD-2-102		812-2X001	Variable Trimmer
C15A	1000								RF Bypass
B	1000								Conv. Filament
C16	1000			BPD-001	DD-102		801-001	19C1	Conv. Plate Dec.
C17	9			SI10NPO	TCZ-10		NPOK-10	19C3	Fixed Trimmer
C18	1500		928006	SI1500	D6-152	1WSD15	GP2L-0015	29C8	RF Bypass
C19	1500		928006	SI1500	D6-152	1WSD15	GP2L-0015	29C8	AGC Filter
C20	1500		928006	SI1500	D6-152	1WSD15	GP2L-0015	29C8	1st V. IF Dec.
C21	150	500	913215	1468-00025	5WST15	SI150-150	1FM-315		IF Coupling
C22	75			SI75N750	TCN-75	N750L-75			Fixed Trimmer
C23	1500		928006	SI1500	D6-152	1WSD15	GP2L-0015	29C8	RF Bypass
C24	.02	400		P488-02	DF-203	PTE4S2		4TM-S2	RF Bypass *
C25	.35	200	931330	P288-35		GT2P25		2TM-P25	AGC Filter
C26	200	500	910225	1468-0002	D6-201	5WST2	GP2K-200	1FM-32	AGC Filter
C27	1500		928006	SI1500	D6-152	1WSD15	GP2L-0015	29C8	2nd V. IF Dec.
C28	270	500	910214	1468-00025	D6-271	5WST25	GP2K-270	1FM-325	IF Coupling
C29	1500		928006	SI1500	D6-152	1WSD15	GP2L-0015	29C8	3rd V. IF Plate Dec.
C30	1500		928006	SI1500	D6-152	1WSD15	GP2L-0015	29C8	3rd V. IF Screen
C31	1500		928006	SI1500	D6-152	1WSD15	GP2L-0015	29C8	3rd V. IF Cathode
C32	270	500	910214	1468-00025	D6-271	5WST25	GP2K-270	1FM-325	IF Coupling
C33	150			SI50N750	TCN-50		N750L-50		Fixed Trimmer
C34	1500		928006	SI1500	D6-152	1WSD15	GP2L-0015	29C8	4th V. IF Plate Dec.
C35	1500		928006	SI1500	D6-152	1WSD15	GP2L-0015	29C8	4th V. IF Screen
C36	1500		928006	SI1500	D6-152	1WSD15	GP2L-0015	29C8	4th V. IF Cathode
C37	25		928110	SI25	D6-250	5WS225	GP1K-25	19C27	IF Coupling
C38	1500		928006	SI1500	D6-152	1WSD15	GP2L-0015	29C8	V. Det. AGC Fil.
C39	5		928017	SI5	TCZ-4.7	5WS7S	GP1K-5	MS-55	V. Diode Filter
C40	47			SI47NPO	TCZ-47		NPOM-47	29C14	Fixed Trimmer
C41	.05	400	921554	P488-05	DF-503	PTE4S5		4TM-S5	Video Coupling
C42	.01	400	921514	P488-01	D6-103	PTE4S1	821-01	4TM-S1	Bias Filter
C43	.22	400	922525	P488-22		PTE4S25		4TM-P22	Vert. Sweep Coupling
C44	.01	400	922514	P488-01	D6-103	PTE4S1	821-01	4TM-S1	Vert. Sweep Coupling
C45	.05	400	921554	P488-05	DF-503	PTE4S5		4TM-S5	Pic. Tube Grid
C46	5		928017	SI5N750	TCZ-4.7	5WS7S	N750K-5	MS-55	S. IF Coupling
C47	1500		928006	SI1500	D6-152	1WSD15	GP2L-0015	29C8	AVC Filter
C48	5000		928109	BPD-005	DD-502	1D5D5	801-005	29C1	S. IF Dec.
C49	1500		928006	SI1500	D6-152	1WSD15	GP2L-0015	29C8	S. IF Screen
C50	68	500	910231	SI68	D6-680	5WS27	GP1K-68	19C10	Limiter Grid Filter
C51	1500		928006	SI1500	D6-152	1WSD15	GP2L-0015	29C8	Limiter Decoupling
C52	1500		928006	SI1500	D6-152	1WSD15	GP2L-0015	29C8	Limiter Screen
C53	50	500	910223	1468-00005	D6-500	5WS25	GP1K-50	1FM-45	Diode Load Cap
C54	.001	600	921713	P688-001	D6-102	PTE8D1		6TM-D1	De-emphasis

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	VOLT	REPLACEMENT DATA: EMERSON PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C55	1500		928006	SI1500	D6-152	1WSD15	GP2L-0015	29C8	Discr. Fil. *
C56	.01	400	921514	P488-01	D6-103	PTE4S1	821-01	4TM-S1	Audio Coupling
C57	.01	400	921514	P488-01	D6-103	PTE4S1	821-01	4TM-S1	Audio Coupling
C58	.001	600	921713	P688-001	D6-102	PTE8D1	GP2L-001	6TM-D1	De-emphasis
C59	.047	400	922554	P488-047	DF-503	PTE4S5		4TM-S47	Audio Coupling
C60	.005	600	921753	P688-005	D6-502	PTE8D5	811-005	6TM-D5	Output Plate
C61	.22	400	922530	P488-22		GT4P25		4TM-P22	V. Amp. Cathode *
C62	.047	400	922554	P488-047	DF-503	PTE4S5		4TM-S47	Sync. Coupling
C63	110	500	910310	1468-0003	D6-101	5WST1	GP1K-100	1FM-31	Sync. Coupling
C64	.05	400	921554	P488-05	DF-503	PTE4S5		4TM-S5	Sync. Coupling
C65	.01	400	922514	P488-01	D6-103	PTE4S1	821-01	4TM-S1	Sync. Coupling
C66	.01	400	922514	P488-01	D6-103	PTE4S1	821-01	4TM-S1	Vert. Sync. Coupling
C67A	2000		1923G28	P688-002	†	PTE6D2	GP2M-002	6TM-D2	Integrator Net
B	5000			P688-005	PC-100	PTE6D5	811-005	6TM-D5	Integrator Net
C	5000			P688-005	/	PTE8D5	811-005	6TM-D5	Output Plate
C68	.0047	600	922753	P688-0047	D6-472	PTE6D5	GP2M-0047	6TM-D47	Vert. MV Feedback
C69	.05	400	921554	P488-05	DF-503	PTE4S5		4TM-S5	Vert. MV Cathode
C70	.047	600	922554	P688-047		PTE6S5		6TM-S47	Vert. Discharge
C71	.22	400	922525	P488-22		GT4P25		4TM-P22	Vert. Sweep Coupling
C72	.02	200	921324	P488-02	DF-203	PTE4S2		2TM-S2	Fixed Trimmer
C73	.82	500	910025	SI82	D6-820	5WST1	GP1K-82	1FM-31	Hor. Sync. Coupling
C74	.05	400	921554	P488-05	DF-503	PTE4S5		4TM-S5	AFC Filter
C75	.5	200	921355	P288-5		GT1P5		1TM-P5	AFC Filter
C76	.02	400	921324	P488-02	DF-203	PTE4S2		4TM-S2	AFC Filter
C77	.047	400	922554	P488-047	DF-503	PTE4S5		4TM-S47	Horiz. AFC Plate
C78	82	500	910022	SI82	D6-820	5WST1	GP1K-82	1FM-31	Horiz. Feedback
C79	180	600	910042	SI180	D6-181	5RST2	GP2K-180	MS-32	Horiz. Osc. Grid
C80	.01	600	922041	P688-01	D6-103	PTE6S1		6TM-S1	Fixed Trimmer
C81	1000	500	910211	1464-001		1R5D1		MS-21	Horiz. Discharge
C82	470	500	910017	1468-0005	D6-471	5WS7S	GP2K-470	1FM-35	Horiz. Sweep Coupling
C83	.047	600	922754	P688-047	DF-503	PTE6S5		6TM-S47	Horiz. Output Screen
C84	.25	200	921330	P488-25		GT2P25		2TM-P25	Horiz. Output Cathode
C85	1500		928008	SI1500	D6-152	1WSD15	GP2L-0015	29C8	Horiz. Output Cathode
C86	1500		928006	SI1500	D6-152	1WSD15	GP2L-0015	29C8	RF Bypass
C87	18	6000	928053						Horiz. Output Plate
C88	.018	1000	922051					MB-522	Damper Filter
C89	.022	1000	922824	P1088-022		PTE8S2		29C8	Damper Filter
C90	1500		928006	SI1500	D6-152	1WSD15	GP2L-0015	29C8	Filament Bypass
C91	.05	400	922101	P488-05	DF-503	PTE4S5		4TM-S5	Line Filter
C92	.05	400	922101	P488-05	DF-503	PTE4S5		4TM-S5	Line Filter

* Not used in all models.
† Items C67A, C67B, C67C, R76A, R76B and R76C are combined into one unit.

CONTROLS

ITEM No.	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: EMERSON PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	150Ω	½	390167			SBB-654-8	Contrast Control - Front
B	1Meg	½					Volume Control and SW - Rear
R2	150Ω	4	390176	RTV-199	5VP-994		Focus Control - Wire Wound
R3A	100KΩ	½	390163	Q11-128	AG-49-S	AN-40	Brightness Control
B	Shaft		Not req.	Not req.	RS-2	AK-4	Attach to R3A Per Instructions
R4A	1Meg	½	390169	Q11-137	AG-61-S	AN-69	Vertical Hold Control
B	Shaft		Not req.	Not req.	RS-2	AK-4	Attach to R4A Per Instructions
R5A	50KΩ	½	390164	Q11-123	AG-44-S	AN-31	Horizontal Hold Control
B	Shaft		Not req.	Not req.	RS-2	AK-4	Attach to R5A Per Instructions
R6A	2 Meg	½	390142	Q11-139	AG-83-S	AN-75	Vertical Size Control
B	Shaft		Not req.	Not req.	FKS-1/4	AK-1	Attach to R6A Per Instructions
R7	5000Ω	2	390143		W-5000	43-5000	Vertical Linearity Control - Wire Wound

RESISTORS

ITEM No.	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: PART No.	IRC PART No.	IDENTIFICATION CODES: ALL RESISTORS ± 10% UNLESS OTHERWISE SPECIFIED
R8	3900Ω			BTS-3900	Antenna Coil Shunt
R9	56KΩ	20%			AGC Network
R10	3200Ω	20%		BTS-2200	RF Amp. Decoupling
R11	10KΩ	20%			RF Coil Shunt
R12	5100Ω				Mixer Grid
R13	220KΩ	20%			Mixer Grid
R14	10KΩ	20%			Mixer Decoupling
R15	10KΩ				Osc. Grid
R16	4700Ω			BTS-4700	Osc. Plate
R17	18KΩ				1st Video IF Transformer Primary Shunt
R18	5600Ω		340872		1st Video IF Transformer Secondary Shunt
R19	1000Ω	20%	350492	BTS-1000	AGC Network
R20	1000Ω	20%	350492	BTS-1000	AGC Network
R21	220Ω		340332	BTS-220	Decoupling Network
R22	68Ω		340212		1st Video IF Amp. Cathode
R23	1000Ω	20%	350492	BTS-1000	1st Video IF Amp. Decoupling
R24	1000Ω	20%	350492	BTS-1000	AGC Network
R25	10KΩ		340732		2nd Video IF Transformer Shunt
R26	10KΩ		340732		2nd Video IF Amp. Grid
R27	68Ω		340212		2nd Video IF Amp. Cathode
R28	1000Ω	20%	350492	BTS-1000	2nd Video IF Amp. Decoupling
R29	5600Ω		340872		2nd Video IF Amp. Grid Choke Coil Shunt
R30	220Ω		340332	BTS-220	3rd Video IF Amp. Cathode
R31	1000Ω	20%	350492	BTS-1000	3rd Video IF Amp. Screen
R32	3700Ω		340592	BTS-3700	3rd Video IF Amp. Plate
R33	1000Ω	20%	350492	BTS-1000	3rd Video IF Amp. Decoupling
R34	220Ω		340332	BTS-220	4th Video IF Amp. Cathode
R35	1000Ω	20%	350492	BTS-1000	4th Video IF Amp. Screen
R36	1000Ω	20%	350492	BTS-1000	4th Video IF Amp. Plate Decoupling
R37	22KΩ		340812	BTS-22K	AGC Network
R38	4700Ω		340652	BTS-4700	Video Detector Diode Load
R39	100KΩ		340972	BTS-100K	AGC Diode Load
R40	1Meg	20%	351212	BTS-1Meg	AGC Network
R41	220KΩ		341052	BTS-220K	Bias Network
R42	10Ω		340012	BW-1/10	Bias Network
R43	1Meg	20%	351212	BTS-1Meg	Video Amp. Grid
R44	5600Ω	5%	3971065	BTS-5600-5%	Video Amp. Plate
R45	220KΩ		341052	BTS-220K	Picture Tube Cathode

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: EMERSON PART No.	IRC PART No.	IDENTIFICATION CODES
R46	22KΩ		340812	BTS-22K	Video Peaking Coil Shunt
R47	1000Ω	20%	350492	BTS-1000	Bias Network
R48	220Ω		340332	BTS-220	Sound IF Amp. Cathode
R49	1Meg	20%	351212	BTS-1Meg	AVC Network
R50	10KΩ		340732	BTS-10K	Voltage Divider
R51	1000Ω	20%	350492	BTS-1000	Bias Network
R52	47KΩ		340892	BTS-47K	Limiter Grid
R53	27KΩ		340872	BTA-27K	Limiter Screen
R54	100K		340972	BTS-100K	Disc. Diode Load
R55	100K		340972	BTS-100K	Disc. Diode Load
R56	68KΩ	20%	340932	BTS-68K	De-emphasis
R57	10Meg	20%	351452	BTS-10Meg	AF Amp. Grid
R58	220KΩ		341052	BTS-220K	AF Amp. Plate
R59	470KΩ	20%	351132	BTS-470K	Output Grid
R60	330Ω		3703T2	BTA-330	Output Cathode
R61	2500Ω	5	394107	1 3/4A-2500	Output Decoupling - Wire Wound
R62	10KΩ		340732	BTS-10K	1st Sync. Amp. Grid
R63	47KΩ		340892	BTS-47K	1st Sync. Amp. Plate
R64	10KΩ		340732	BTS-10K	Isolation
R65	100K		340972	BTS-100K	Bias Network
R66	2.2Meg		341292	BTS-2.2Meg	1st Sync. Sep. Grid
R67	22KΩ		340812	BTS-22K	1st Sync. Sep. Plate
R68	10KΩ		340732	BTS-10K	Voltage Divider
R69	330KΩ	20%	341092	BTS-330K	2nd Sync. Sep. Grid
R70	10KΩ		340732	BTA-10K	2nd Sync. Amp. Grid
R71	1Meg	20%	351212	BTS-1Meg	2nd Sync. Amp. Cathode
R72	1500		350432	BTS-1500	2nd Sync. Amp. Plate
R73	220Ω	20%	340332	BTS-220	2nd Sync. Amp. Plate
R74	2200Ω		340572	BTS-2200	2nd Sync. Amp. Plate
R75	22KΩ		340812	BTS-22K	Voltage Divider
R76A	22KΩ	†	923G26		Integrator
B	820KΩ			BTS-8200	Integrator
C	8200Ω			BTS-8200	Integrator
R77	2200Ω		340572	BTS-2200	Vertical Osc. Cathode
R78	150KΩ		371012	BTS-150K	Vertical Osc. Plate
R79	470KΩ		341132	BTS-470K	Vertical Discharge Grid
R80	470KΩ		341132	BTS-470K	Vertical Discharge Plate
R81	10KΩ		340732	BTS-10K	Vegical Peaking
R82	220KΩ		341052	BTS-220K	Voltage Divider
R83	150KΩ	20%	341012	BTS-150K	Voltage Divider
R84	3.3Meg		341332	BTS-3.3Meg	Vertical Output Grid
R85	470Ω		340412	BTS-470	Vertical Output Cathode
R86	470Ω		370412	BTA-470	Decoupling
R87	470Ω		370412	BTA-470	Decoupling
R88	220KΩ	20%	341053	BTS-220K	Damping
R89	100KΩ	20%	340972	BTS-100K	Vertical Retrace Blanking Network
R90	100KΩ	20%	340972	BTS-100K	Vertical Retrace Blanking Network
R91	330KΩ		341092	BTS-330K	Horizontal AFC Grid
R92	820KΩ		36U92	BTS-820K	Horizontal AFC Grid
R93	82KΩ	5%	3960S2	BTA-82K-5%	Horizontal AFC Cathode
R94	330KΩ	5%	3960S3	BTA-330K-5%	Horizontal AFC Cathode
R95	100KΩ	20%	340972	BTS-100K	Horizontal AFC Plate
R96	3900Ω		340832	BTS-3900	Horizontal AFC Filter
R97	120KΩ	1	370992	BTA-120K	Voltage Divider
R98	75KΩ	5%	361012		Horizontal Osc. Grid - See Note
R99	75KΩ	5%			Horizontal Osc. Grid - See Note
R100	82KΩ		340952	BTA-82K	Horizontal Osc. Plate
R101	8200Ω		340712	BTS-8200	Horizontal Osc. Transformer Shunt
R102	150KΩ	20%	341013	BTS-150K	Horizontal Feedback
R103	10K		340732	BTS-10K	Decoupling
R104	2.2Meg		341292	BTS-2.2Meg	Bias Network
R105	68Ω		340212		Parasitic Suppressor
R106	1Meg	20%	351212	BTS-1Meg	Horizontal Output Grid
R107	100Ω	2	397027	BW-2-100	Horiz. Output Cathode - Wire Wound
R108	10KΩ	5	394104	1 3/4A-10K	Horiz. Output Screen - Wire Wound
R109	750Ω	10	394108	1 3/4A-750	Horiz. Bias Coil Shunt - Wire Wound
R110	1000Ω	5	394109	1 3/4A-1000	Voltage Divider - Wire Wound
R111	1000Ω	15	394105	2D-1000	Voltage Divider - Wire Wound
R112	8000Ω	10	925148	1 3/4A-8000	Voltage Divider - Wire Wound
R113	4000Ω	5	925148	1 3/4A-4000	Voltage Divider - Wire Wound
R114	100K	20%	922514	BTS-100K	Isolation

† Items R76A, R76B, R76C, C67A, C67B and C67C are combined into one unit in some sets.
Note: Some models may use single 150KΩ resistor in place of R98 and R99.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	SEC. 3	REPLACEMENT DATA: EMERSON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC	780VCT	5VAC	6.3VAC	730028			TP392 and
	① 1.82A	.210ADC	② 3A	② 1.2A	730027 ②			F633 ③
			SEC. 4	SEC. 5				
			6.3VAC	6.3VAC				
			② 2.7A	② 5A				

① Used for SEC. # 4.
② Alternate power trans. used with separate filament trans. PT # 730028

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	SEC.	REPLACEMENT DATA: EMERSON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	520Ω	0Ω	738047 Or			HV0-6	Horiz. Output Trans.
	Tap 85Ω		738048				
T3	440Ω	.4Ω	738044			A-3039	Vert. Output Trans.
T4A	42Ω		708117				Horiz. Deflection Coil
B	3.3Ω						Vertical Deflection Coil
T5	1500Ω		708047				Focus Coil

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		EMERSON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T6	5.8KΩ	4Ω	320Ω	.65Ω	734051	A-3849	A-3019	R0-9 ①	① New mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	EMERSON PART No.	VIKING PART No.	QUAM PART No.	
SP1A	PM	4Ω	180041	6J4	6A15	
B	PM	4Ω	180050	12J12	12A31	
	CONE DIA.	V. C. DIA.				
SP2A	5 7/8"	9/16"				
	11 7/8"	1"				

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	EMERSON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.170ADC	100Ω	3.7 Henries	737011	C-1410 ①	C-2991 ①	TR-3300①	① New mounting hole.

COILS (RF-IF)

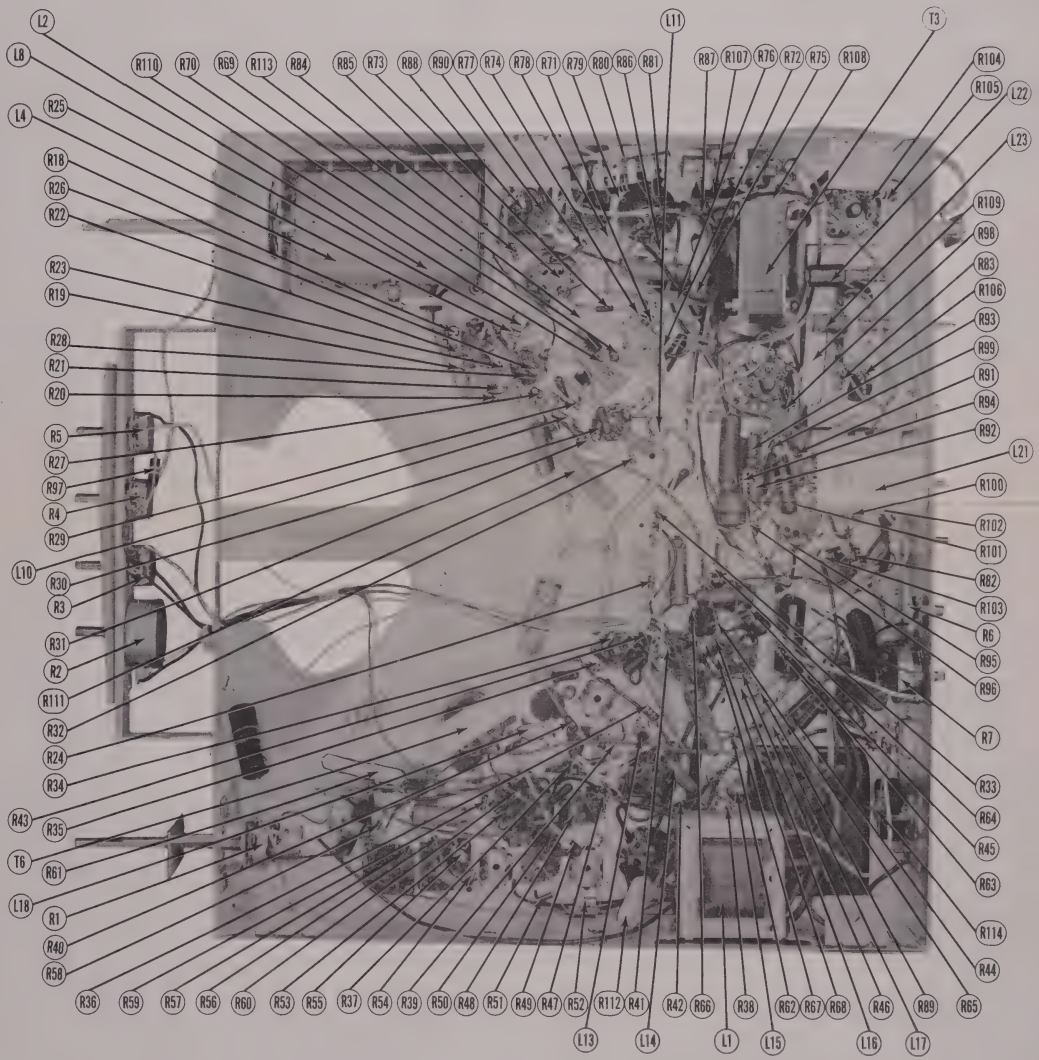
ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	EMERSON PART No.	MEISSNER PART No.	
L2	Ant. Coil	0Ω	0Ω			Part of Tuner Part # 470651
L3	Fil. Choke	0Ω				
L4	RF, Mixer Grid And Osc. Coils	0Ω				
L5	Fil. Choke	0Ω				
L6	1st Video IF Primary	.3Ω				
L7	1st Video IF Secondary	.3Ω				
L8	2nd Video IF	.2Ω		720105		Includes Trap
L9	3rd Video IF	.2Ω		720088		
L10	Grid Choke	2.7Ω		705014		20 Microhenries
L11	4th Video IF	.2Ω		720091		Includes Trap
L12	5th Video IF	.7Ω	.7Ω	720089		
L13	4.5MC Trap	3.2Ω		708032		
L14	Peaking	3Ω		705014		20 Microhenries (Green)
L15	Peaking	16Ω		708116		1000 Microhenries (Blue-Yellow Dots)
L16	Peaking	15Ω		708099	19-1923	330 Microhenries (White Dot)
L17	Peaking	21Ω		708115		660 Microhenries (Yellow-Yellow Dots)
L18	1st Sound IF	3.8Ω		708093		35 Microhenries (Red Dot)
L19	2nd Sound IF	1.6Ω	1.6Ω	720081		
L20	Disc. Trans.	1.7Ω	1.6Ω	708018		
L21	Horiz. Osc. Coil	120Ω	38Ω	738035		
L22	Horiz. Lin.	37Ω		708003		
L23	Horiz. Size	7Ω		708058		

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			EMERSON PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M1	3AG	1/4Amp.	808170		318.250		

MISCELLANEOUS

ITEM No.	PART NAME	EMERSON PART No.	NOTES
M2	RF Tuner	470651	
M3	Ion Trap	708061	
A12	Trimmer	900064	1st Sound IF (3-35MMF)
B3	Trimmer	900054	Horizontal Drive (25-300MMF)
	Safety Glass	520152	Models 580D
	Safety Glass	520146	Model 681B
	Safety Glass	520149	Model 686D
	Safety Glass	535036	Model 676D
	Cover	411043	Service Control
	Knob	460177	Channel Selector
	Knob	460178	Fine Tuning
	Knob	460175	Contrast
	Knob	460176	Volume



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

JEWEL
MODEL 5050

JEWEL
MODEL 5050

JEWEL MODEL 5050

TRADE NAME	Jewel Model 5050
MANUFACTURER	Jewel Radio Co., 10-40 45th Ave., Long Island City 1, New York
TYPE SET	Three Power operated portable Superheterodyne Receiver
TUBES (FOUR)	Types 1R5 Converter, 1U4 IF Amp., 1U5 Det-AVC-Af, 3V4 Power Output
POWER SUPPLY	110-120 Volts AC-DC or 7.5 Volts "A" Supply and 90 Volts "B" Supply
RATING	.15 Amp. @ 117 Volts AC or 46 MA @ 7.5 Volts DC and 18MA @ 90 Volts DC
TUNING RANGE—BROADCAST	535-1650KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning gang fully closed and set pointer straight up.
Use isolation transformer if available. If not connect a .1MFD capacitor in series with low side of signal generator and B-.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

ALIGNMENT INSTRUCTIONS

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd.	High side to pin 6 (Grid) of 1R5 (V1). Low side to chassis.	455KC (400~ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output. If AC power is used without an isolation transfromer reduce dummy antenna to 200MMF toprevent hum modulation.
2.		Loop	1650KC	Tuning gang fully open.	Across voice coil.	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		Loop	1400KC	Tune for max. output.	Across voice coil.	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

JEWEL MODEL 5050

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: JEWEL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	1R5	1R5	7AT	
V2	IF Amplifier	1U4	1U4	6AR	
V3	Det.-AVC-AF	1U5	1U5	6BW	
V4	Power Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: JEWEL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	50	150	31-31A						Filter Red
B	30	150							Filter Blue
C	200	25							Filament Bypass Grn
C2	.05	400	32-5	P488-05	DF-503	PTE4S5		4TM-S5	AVC Filter
C3	50	500		1468-00005	D6-500	5W5Q5	GP1K-50	1Fm-45	Osc. Grid Cap.
C4	.05	400	32-5	P488-05	DF-503	PTE4S5		4TM-S5	Decoupling
C5	.2	400	32-56	P488-22		GT4P2		4TM-P22	Conv. Filament
C6	.05	400	32-5	P488-05	DF-503	PTE4S5		4TM-S5	Conv. Filament
C7	.01	400	32-29	P488-01	D6-103	PTE4S1	821-01	4TM-S1	IF Grid Filter
C8A	100		*35-24	S1100	*PC-50	5W5T1	GP1K-100	19C11	Diode RF Filter
B	100			S1100		5W5T1	GP1K-100	19C11	Diode RF Filter
C9	.002	600	32-17	P688-002	D6-202	PTE6D2	GP2M-002	6TM-D2	Audio Coupling
C10	.01	400	32-29	P488-01	D6-103	PTE4S1	821-01	4TM-S1	AF Amp. Screen
C11	.002	600	32-50	P688-002	D6-202	PTE6D2	GP2M-002	6TM-D2	Audio Coupling
C12	.005	600	32-20	P688-005	D6-502	PTE6D5	811-005	6TM-D5	Output Plate
C13	.1	400	32-13	P488-1	DF-104	PTE4P1		72P52	Line Isolation †
C14	.05	400	32-5	P488-05	DF-503	PTE4S5		4TM-S5	Line Filter

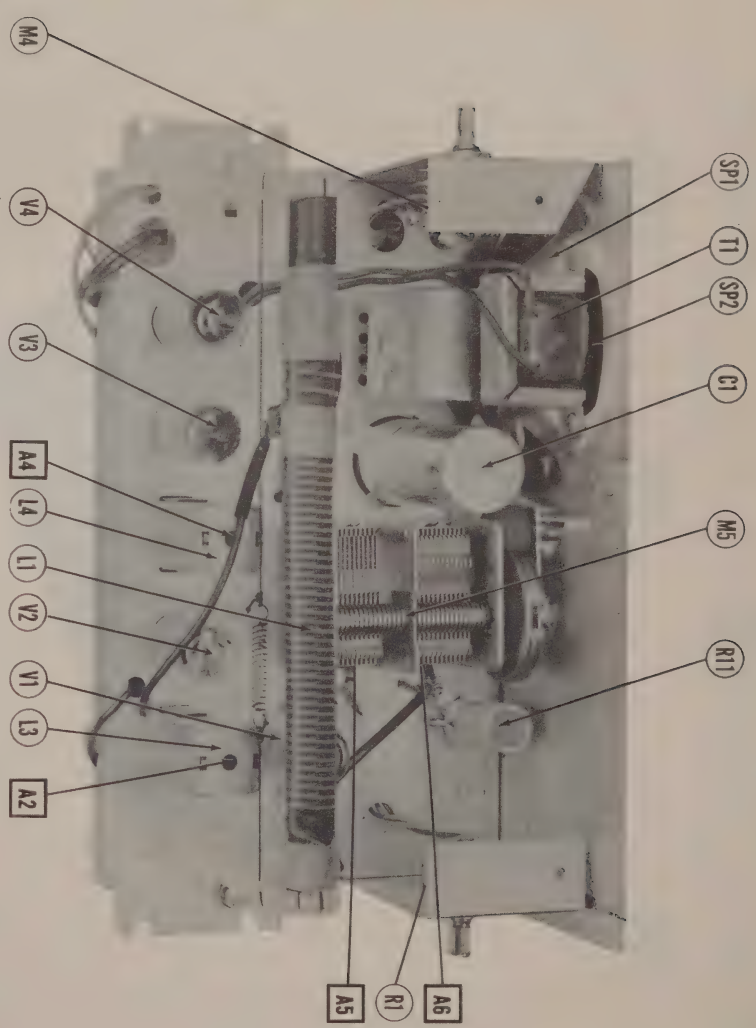
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: JEWEL PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1Meg	½	50-28	Q13-137	AG-63-Z	BSK-70	Volume Control
B	Shaft		Not Req	Not Req	KES-3	Not Req	Attach to R1A Per Instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: JEWEL PART No.	IRC PART No.	IDENTIFICATION CODES
R2	100KΩ	½	20-49		Osc. Grid
R3	2.2Meg	½	20-6	BTS-2.2Meg	AVC Network
R4	2.2Meg	½	20-6	BTS-2.2Meg	IF Amp. Grid - See Note 2
R5	8200Ω	½	20-42		IF Amp. Screen
R6	47KΩ	½	35-24 *	BTS-47K	Diode Filter
R7	10Meg	½	20-57	BTS-10Meg	AF Amp. Grid
R8	4.7Meg	½	20-53	BTS-4.7Meg	AF Amp. Screen
R9	220K	½	20-74	BTS-220K	AF Amp. Plate
R10	1Meg	½	20-14	BTS-1Meg	Output Grid
R11	2500Ω	8	20-145	1 3/4A-2500	Filament String - Wire Wound
R12	2700Ω	1	20-134	BTA-2700	Filter
R13	33KΩ	1		BTA-33K	Filament String - See Note1
R14	47Ω	1	20-31		Surge Limiter
R15	1500Ω	½	20-109	BTS-1500	Filament String
R16	1000Ω	½	20-67	BTS-1000	Filament String
R17	1000Ω	½	20-67	BTS-1000	Filament String

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		JEWEL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	7.8KΩ	4Ω	375Ω	.31Ω		A-3329①	A-2932 ①	RO-16 ①	① Drill new mounting hole

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			JEWEL PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V. C. IMP.	80-26	ST113 ② Mod. P4-X	4A1 ②	② Drill out rivets on original speaker and remount on original bracket
SP1	PM	4Ω				
	CONE DIA.	V. C. DIA.				
SP2	4"	9/16				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA	
		PRI.	SEC.	JEWEL PART No.	MEISSNER PART No.
L1	Loop Ant.	.3Ω		62-24	
L2	Osc. Coil	.6Ω	3.4Ω	60-24	
L3	1st IF	25Ω	25Ω	61-23	
L4	2nd IF	25Ω	25Ω	61-23	

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT	JEWEL PART No.	SYLVANIA PART No.	SELETRON PART No.	
M1	.062ADC	73-3	NC-5 ③	5M4 ③	③ Mount on top of Chassis

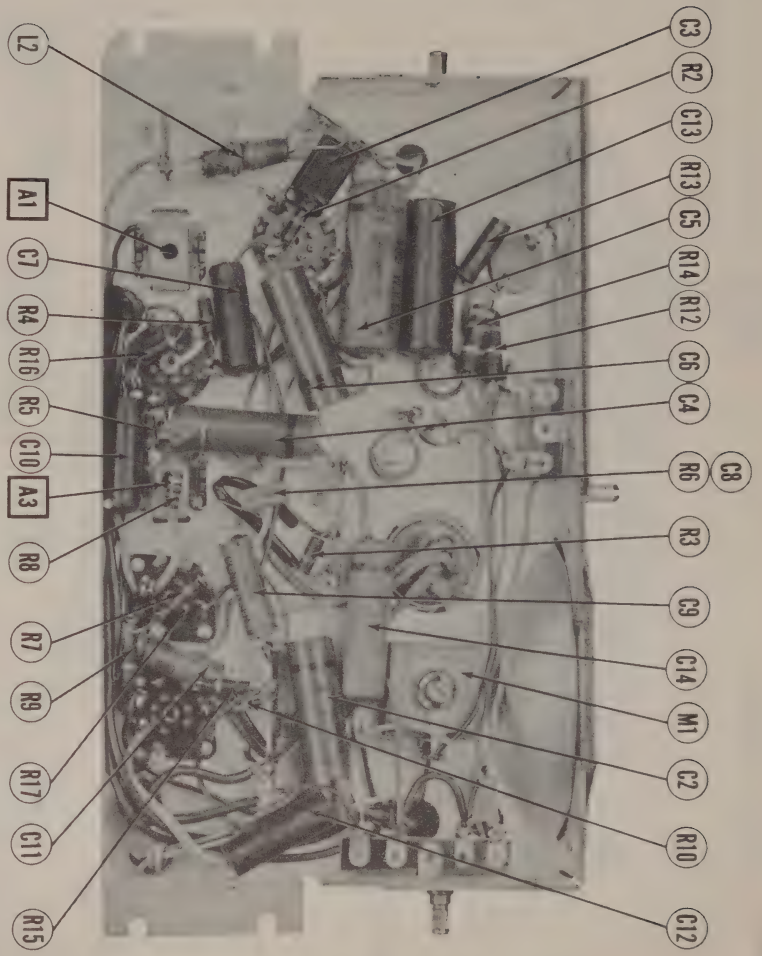
BATTERIES

ITEM No.	VOLTAGE	JEWEL PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M2	7.5 V "A"		717			C5			
M3	90V "B"			490			N60		

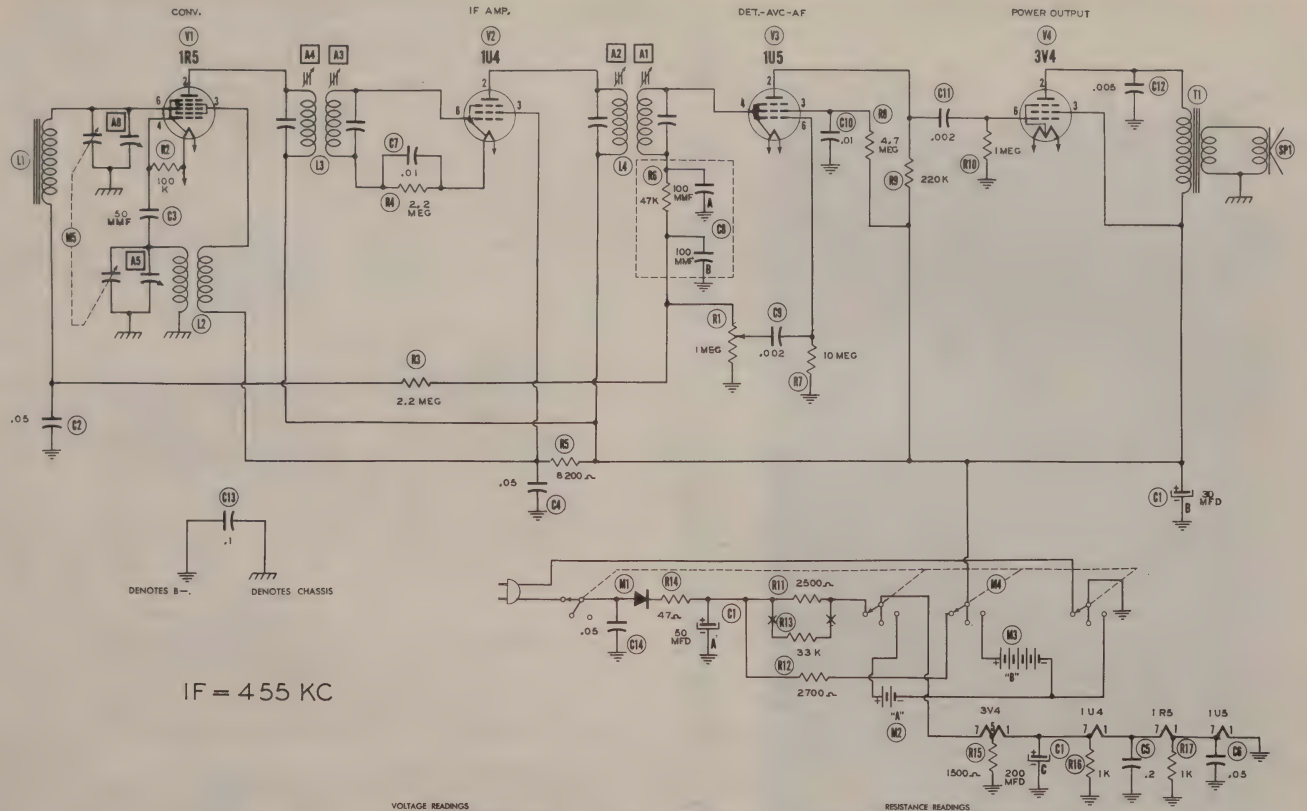
MISCELLANEOUS

ITEM No.	PART NAME	JEWEL PART No.	NOTES
M4	Switch	65-13	AC/DC - Battery
M5	2 Gang Var. Cap.	30-32B	(39-451MMF, 34-207 MMF)
	Dial Scale	A120-57A	
	Knob	122-43	Volume
	Knob	122-44	Switch

CHASSIS—BOTTOM VIEW



JEWEL MODEL 5050



IF = 455 KC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	1.4VDC	85VDC	65VDC	8-7.6VDC	1.4VDC	0V	3VDC
V 2	1U4	3VDC	85VDC	65VDC	0V	3VDC	.2VDC	4.3VDC
V 3	1U5	0V	70VDC	4VDC	-.1VDC	0V	0V	1.4VDC
V 4	3U4	4.3VDC	83VDC	85VDC	0V	5.6VDC	0V	7VDC

‡ TAKEN WITH VACUUM TUBE VOLTMETER

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	∞	†2.7KΩ	†1IKΩ	100KΩ	∞	3.3Meg	∞
V 2	1U4	∞	†2.7KΩ	†1IKΩ	0Ω	∞	2.2Meg	∞
V 3	1U5	0Ω	†220KΩ	†4.7Meg	1Meg	Inf.	10Meg	∞
V 4	3V4	∞	†3.1KΩ	†2.7KΩ	Inf.	∞	1Meg	∞

* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE
† MEASURED FROM OUTPUT OF M1

V & R TAKEN IN AC-DC POSITION

THE COOPERATION OF THE MANUFACTURER OF THIS
RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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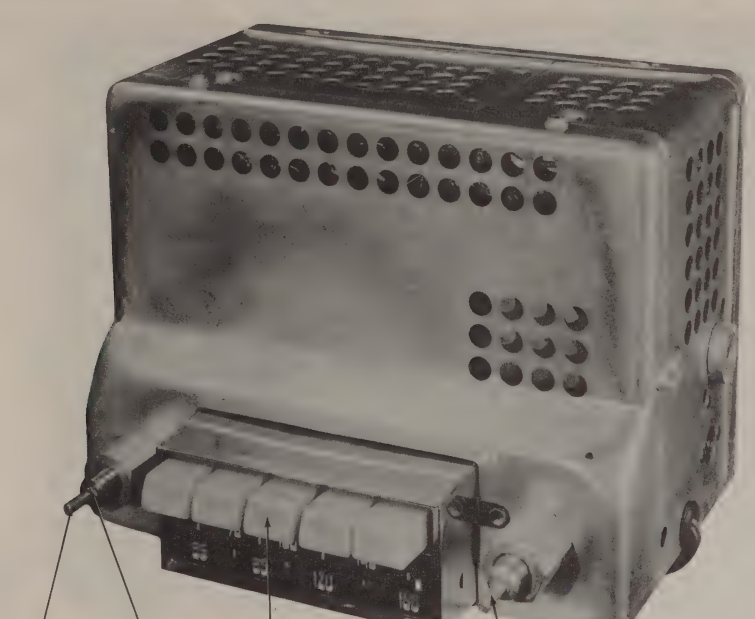
128-7

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

KAISER-FRAZER
MODEL 100170



KAISER-FRAZER
MODEL 100170

KAISER-FRAZER MODEL 100170

TRADE NAME	Kaiser-Frazer, Model 100170
SUPPLIER	Kaiser-Frazer Motors, Willow Run, Michigan
TYPE SET	Battery operated custom built 1951 Kaiser Automotive Superheterodyne Receiver
TUBES (EIGHT)	Types 6BA6 RF Amp., 6BE6 Converter, 6BA6 IF Amp., 6AV6 Det-AF Amp., 6AV6 Phase Inverter-AVC, (2) 6V6GT Power Output, 0Z4 Rectifier
POWER SUPPLY	6Volt Storage Battery RATING 7Amp. @ Volts DC
TUNING RANGE—BROADCAST	550-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mf.	High side to pin 7 (Grid) of 6BE6 (V2) Low side to chassis	260KC (400Ωmod)	High freq. end.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	Check the mechanical position of the oscillator core. The slotted end of the core should be 1 25/32 inches from the mounting end of the coil form. This measurement can be made by inserting a suitable plug into the coil form.						
3.	68mmf.	High side thru 68 mmf. to antenna connector. Low side to chassis.	1615KC	High freq. end.	Across voice coil.	A5, A6, A7	Adjust for maximum output.
4.	"	"	1000KC	Tune for max. output.	"	A8, A9	Adjust for maximum output. Set pointer to 1000KC by adjusting the pointer adjust screw.
5.	"	"	1615KC	High freq. end.	"	A6, A7	Adjust for maximum output.
	After set is installed, fully extend the antenna and tune in a weak station near 1400KC. Adjust A7 for maximum output.						

PUSHBUTTON ADJUSTMENTS

PRESS THE DESIRED BUTTON TO THE LEFT AND PULL OUTWARD. CAREFULLY TUNE IN MANUALLY THE STATION THE PUSHBUTTON IS TO BE SET FOR. PUSH THE BUTTON ALL THE WAY IN. REPEAT THIS PROCEDURE FOR EACH PUSHBUTTON.

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PARTS LIST AND DESCRIPTIONS

KAISER-FRAZER MODEL 100170

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: KAISER-FRAZER PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	RF Amplifier	6BA6	6BA6	7BK	
V2	Converter	6BE6	6BE6	7CH	
V3	IF Amplifier	6BA6	6BA6	7BK	
V4	Detector-AF Amp.	6AV6	6AV6	7BT	
V5	Phase Inv.-AVC	6AV6	6AV6	7BT	
V6	Power Output	6V6GT	6V6GT	7AC	
V7	Power Output	6V6GT	6V6GT	7AC	
V8	Rectifier	0Z4	0Z4	4R	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: KAISER PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	20	400	M988	E3C152		UP2245C		TVL-3678	■ Filter
B	20	400							▲ Filter
C	20	25							Output Cathode
C2	.05	200	E503	P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C3	10	500	G100	1468-00001	D6-100	5W5Q1	GP1K-10	MS-41	RF Coupling
C4	39	500	G390	1468-00004	D6-390	5W5Q4	GP1K-39	MS-44	Fixed Trimmer
C5	180		7257424				N150M-180		Fixed Trimmer
C6	.05	400	E503	P488-05	DF-503	PTE4S5		4TM-S5	Decoupling
C7	47	500	G470	1468-00005	D6-470	5W5Q5	GP1K-47	1FM-45	IF Coupling
C8	.002	600	E202	P688-002	D6-202	PTE6D2	GP2M-002	6TM-D2	Tone Comp.
C9	.003	600	E302	P688-003	D6-302	PTE6D3	GP2M-003	6TM-D3	Tone Comp.
C10	.002	600	E202	P688-002	D6-202	PTE6D2	GP2M-002	6TM-D2	Audio Coupling
C11	.1	200	E104	P288-1	DF-104	PTE4P1		2TM-P1	AF Amp. Cathode
C12	.01	400	E103	P488-01	D6-103	PTE4S1	821-01	4TM-S1	Audio Coupling
C13	.02	400	E203	P488-02	DF-203	PTE4S2		4TM-S2	Audio Coupling
C14	.006	800	H602	P1688-006		PTE16D6		MB-D6	Output Plate
C15	.006	1600	H602	P1688-006		PTE16D6		MB-D6	Buffer

CONTROLS

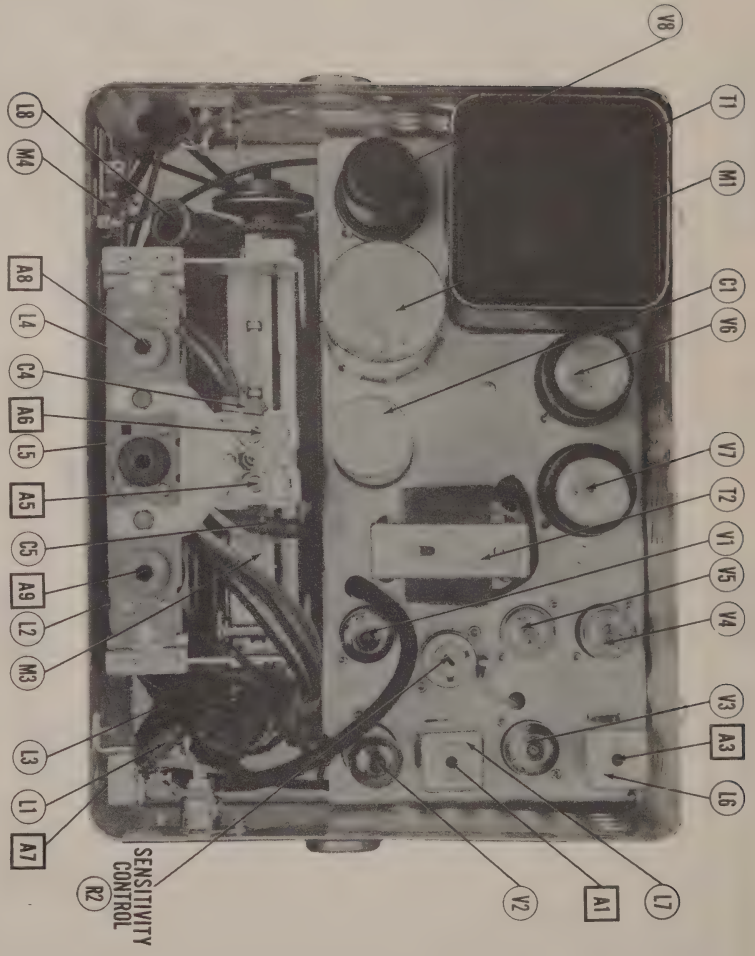
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: KAISER-FR. PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
				Concentrikit			
R1A	2Meg	½	7260674	B13-139 *			Tone Control - Front
B	300KΩ	½		B18-132X *			Volume Control - Tapped @ 50KΩ -Rear
C	Shaft end			E-187 *			Attach per instructions in "Concentrikit"
D	Switch			76-2 *			Attach per instructions in "Concentrikit"
E	Bushing			S-5 *†			Attach to R1A
R2	1000Ω	1	7260545				Sensitivity control - Wire wound - Minimum resistance 100Ω

* Additional parts to be used in "Concentrikit"
† Cut off bushing to duplicate original

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: KAISER PART No.	IRC PART No.	IDENTIFICATION CODES
R3	2.2Meg	½	A225	BTS-2.2Meg	AVC Network
R4	68Ω	2	1215558		RF Amp. Cathode
R5	15KΩ	2		BTB-15K	RF Amp. Plate
R6	330KΩ	½	A334	BTS-330K	AVC Network
R7	22KΩ	½	A223		Osc. Grid
R8	15KΩ	2	C153	BTB-15K	Screen Loading
R9	220KΩ	½	A224	BTS-220K	Diode Filter
R10	6.8Meg	½	A685	BTS-6.8Meg	AF Amp. Grid
R11	220Ω	½	A221	BTS-220	AF Amp. Cathode
R12	220K	½	A224	BTS-220K	AF Amp. Plate
R13	1.5Meg	½	A155	BTS-1.5Meg	AVC Network - See Note 1
R14	1.5Meg	½	A155	BTS-1.5Meg	AVC Network - See Note 1
R15	100KΩ	½	A104	BTS-100K	Phase Inv. Grid
R16	750Ω	½			Phase Inv. Cathode - See Note 2
R17	200Ω	½	A222	BTS-2200	Phase Inv. Cathode
R18	220KΩ	½	A224	BTS-220K	Phase Inv. Plate
R19	180KΩ	½	1215560	BTS-180K	Voltage Divider
R20	220KΩ	½	A224	BTS-220K	Output Grid
R21	390Ω	2	1219690	BW-2-390	Output Cathode - Wire wound

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

R22	270KΩ	½	A274	BTS-270K	Output Grid
R23	6800Ω	½	1213483	BTS-6800	Feedback
R24	1800Ω	2		BW-2-1800	Filter - Wire wound
R25	220Ω	1	B221	BW-1-220	Hash Suppressor - Wire wound
R26	100K	½	A104	BTS-100K	Tone Compensation

Note 1 Some models use 1Meg Resistor in this application
Note 2 Some models use 680Ω Resistor in this application

TRANSFORMER (VIBRATOR)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	KAISER PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	6.3VDC @ 4.6A	540VCT .062ADC			6060	P-4062		VT-4①

① Drill new mounting holes

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		KAISER PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	7.1KΩ CT	4.9Ω	395Ω CT	.3Ω	7260531	A-3850 ①		RO-304	① Drill new mounting holes

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			KAISER-FRAZER PART No.	VIKING PART No.	QUAM PART No.	
	FIE LD	V. C. IMP.	7260563	69J9	69A2	
SP1	PM	4.9Ω				
	CONE DIA.	V. C. DIA.				
SP2	6 1/8X9"	1"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA	
		PRI.	SEC.	KAISER PART No.	MEISSNER PART No.
L1	Ant. Choke	.7Ω		7255738	
L2	Ant. Coil	10Ω		7258914	
L3	Ant. Choke	5Ω		7240251	
L4	RF Coil	10Ω		7258914	
L5	Osc. Coil	1.3Ω	4.8Ω	7258911	
L6	1st. IF	32Ω	32Ω	1218725	
L7	2nd IF	32Ω	32Ω	1218726	
L8	Hash Choke	0Ω		1217846	
L9	Hash Choke	0Ω		1217846	

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA				INSTALLATION NOTES
				KAISER PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	RADIART PART No.	
M1	INT	6.3V	115Ω	8542		5300	5300	

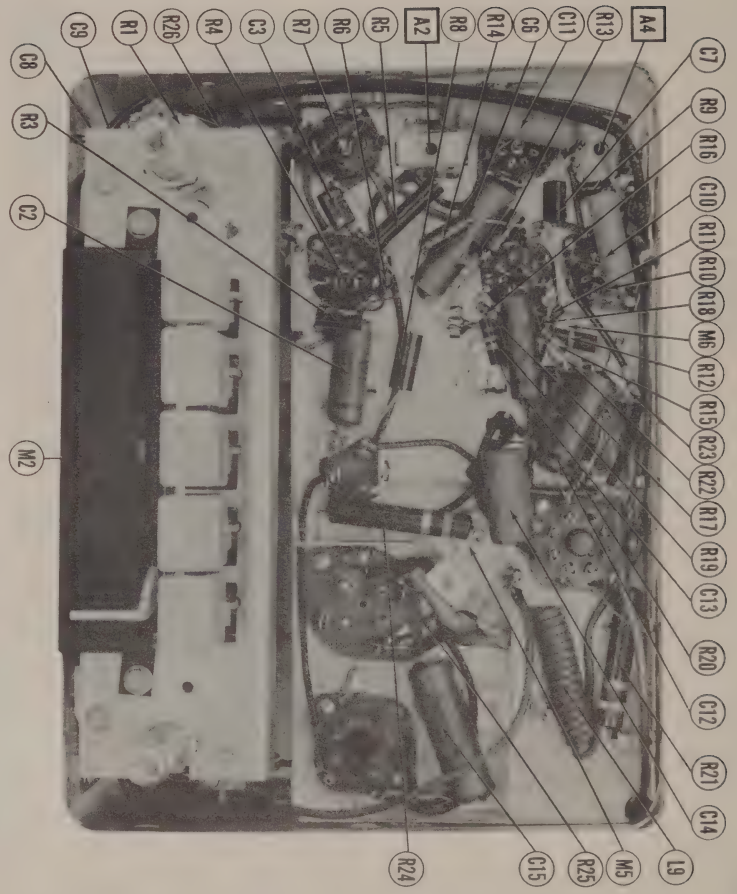
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					KAISER PART No.		
M2	Bayonet	6-8	.15	Blue	187189		Type Number 44

MISCELLANEOUS

ITEM No.	PART NAME	KAISER PART No.	NOTES
M3	Tuning unit		
M4	Spark Plate	1219822	
M5	Spark Plate	1217848	
M6	Spark Plate	1217848	
A5	Dual Trimmer	7242454	Osc. Adj.
A6			RF Adj.
A7	Trimmer	7259597	Ant. Adj.
	Dial Glass	7260524	
	Pointer assby.	7260558	

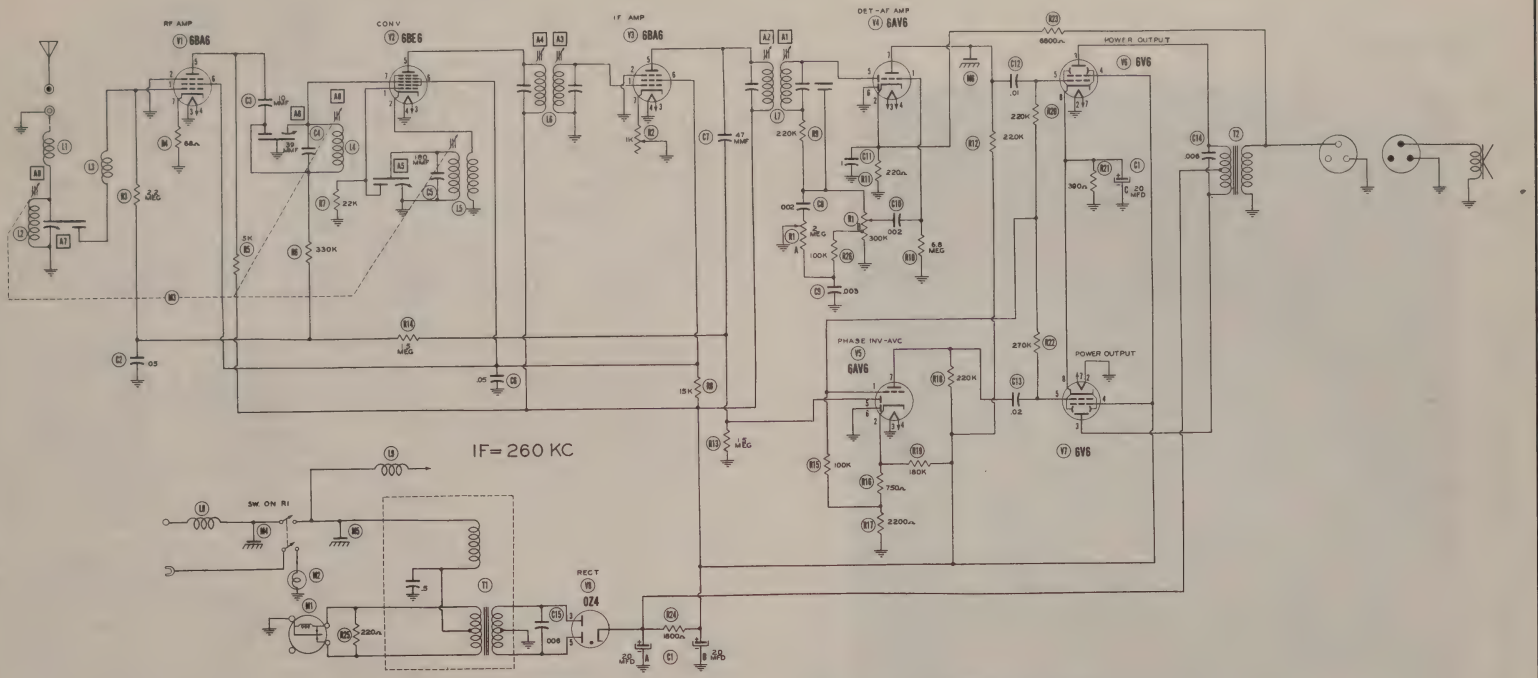
CHASSIS—BOTTOM VIEW



SET 128 FOLDER 8

KAISER-FRAZER MODEL 100/70

KAISER-FRAZER MODEL 100/70



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6BA6	0V	0V	0V	6.3VDC	110VDC	65VDC	.5VDC	
V 2	6BE6	1-5.4VDC	0V	6.3VDC	0V	115VDC	65VDC	0V	
V 3	6BA6	0V	0V	6.3VDC	0V	115VDC	65VDC	2.8VDC .5VDC	
V 4	6AV6	-.6VDC	-.2VDC	0V	6.3VDC	-.4VDC	0V	85VDC	
V 5	6AV6	1.7VDC	3.8VDC	0V	6.3VDC	0V	0V	85VDC	
V 6	6V6GT	0V	0V	210VDC	180VDC	1VDC	0V	6.3VDC	13VDC
V 7	6V6GT	0V	0V	210VDC	180VDC	1VDC	1.8VDC	6.3VDC	13VDC
V 8	0Z4	0V	0V	335VAC	0V	335VAC	0V	0V	315VDC

‡ TAKEN WITH VACUUM TUBE VOLTMETER

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6BA6	3.3Meg	0Ω	0Ω	.6Ω	117KΩ	117KΩ	68Ω	
V 2	6BE6	33KΩ	1.3Ω	.4Ω	0Ω	11.8KΩ	117KΩ	3.3Meg	
V 3	6BA6	33Ω	0Ω	.4Ω	0Ω	11.8KΩ	117KΩ	2.8KΩ 100Ω	
V 4	6AV6	6.8Meg	220Ω	0Ω	.4Ω	320KΩ	0Ω	1220KΩ	
V 5	6AV6	100KΩ	3KΩ	0Ω	.4Ω	1.3Meg	0Ω	1220KΩ	
V 6	6V6GT	0Ω	0Ω	1290Ω	11.8KΩ	320KΩ	3Ω	.4Ω	390Ω
V 7	6V6GT	0Ω	0Ω	1290Ω	11.8KΩ	380KΩ	100KΩ	.4Ω	390Ω
V 8	0Z4	0Ω	Inf.	300Ω	Inf.	300Ω	Inf.	Inf.	90KΩ

† MEASURED FROM PIN 8 OF V8

THE COOPERATION OF THE MANUFACTURER OF THIS
RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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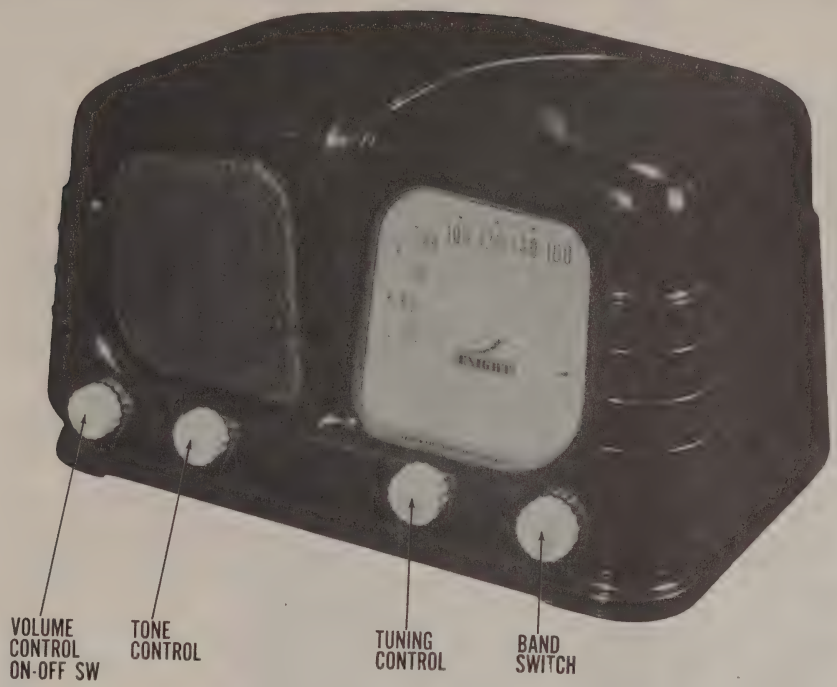
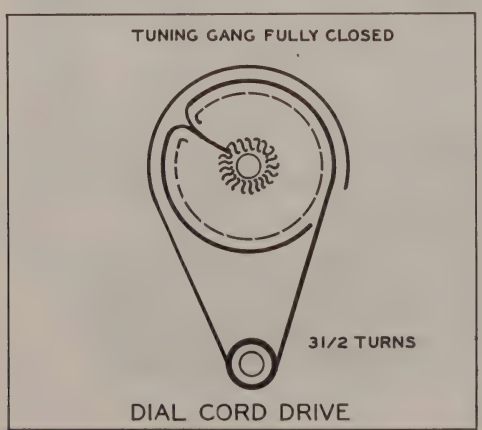
1 - DC Voltage measurements are at 20, 000 ohms per volt; AC Voltages measured at 1000 ohms per volts.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Battery voltage maintained at 6.3 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

KNIGHT
MODELS 8G-200, 8G-201



KNIGHT
MODELS 8G-200, 8G-201

TRADE NAME	Knight, Models 8G-200, 8G-201	
SUPPLIER	Allied Radio Comp., 833 W. Jackson Blvd., Chicago, Ill.	
TYPE SET	AC-DC Operated AM-FM Superheterodyne Receiver with Loop Antenna	
TUBES (EIGHT)	Types 6BA6 RF Amp., 6BE6 Converter, 6BA6 1st IF Amp., 6BA6 FM 2nd IF Amp., 6AL5 Ratio Det., 6SQ7 DET-AVC-AF, 25L6GT Power Output, 25Z6GT Rectifier	
POWER SUPPLY	110-120 Volts AC	RATING .44 Amp. at 117 Volts AC
TUNING RANGE-BROADCAST	535-1620KC	FREQ. MOD. 88-108 MC



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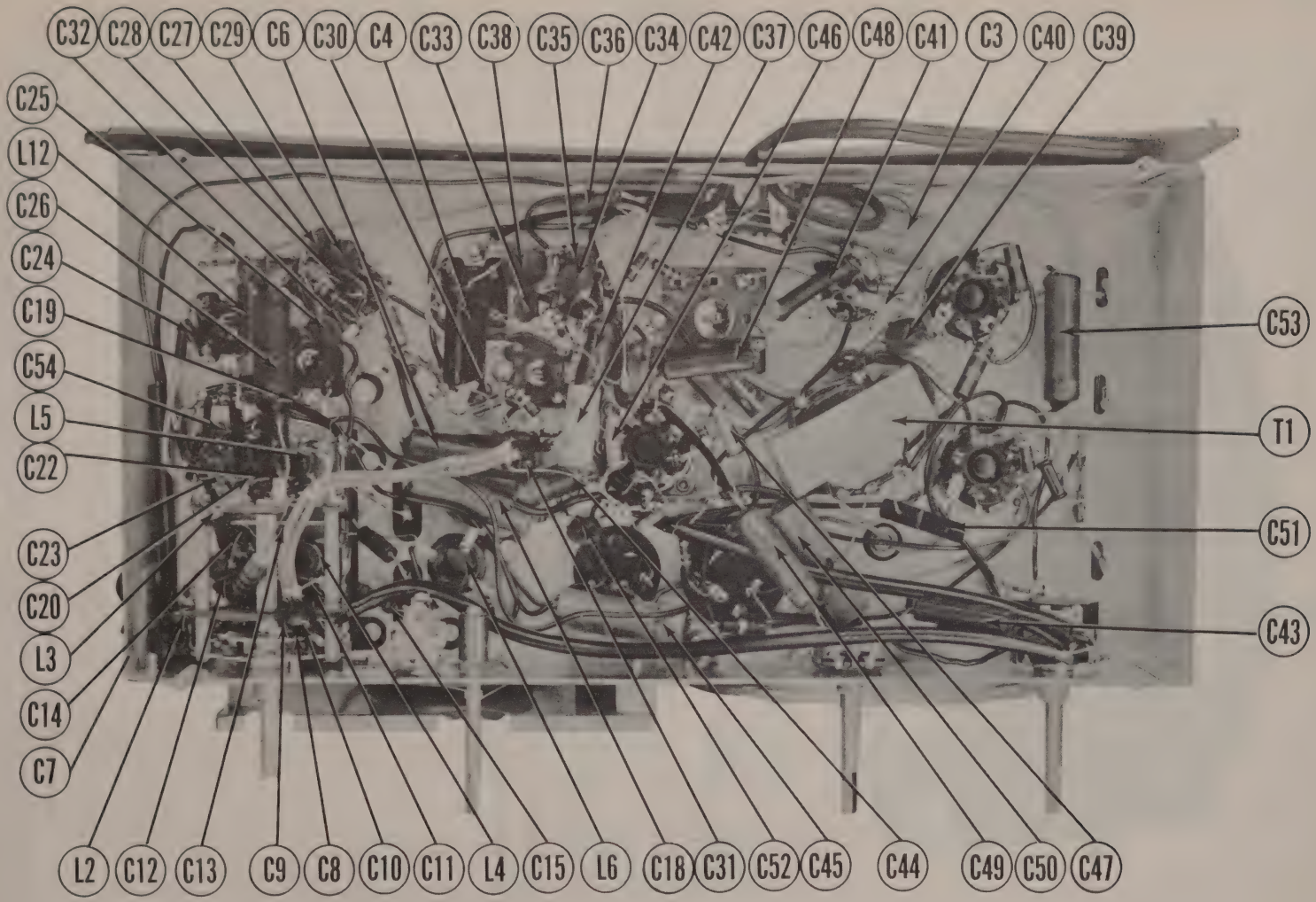
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C41
C3
C40
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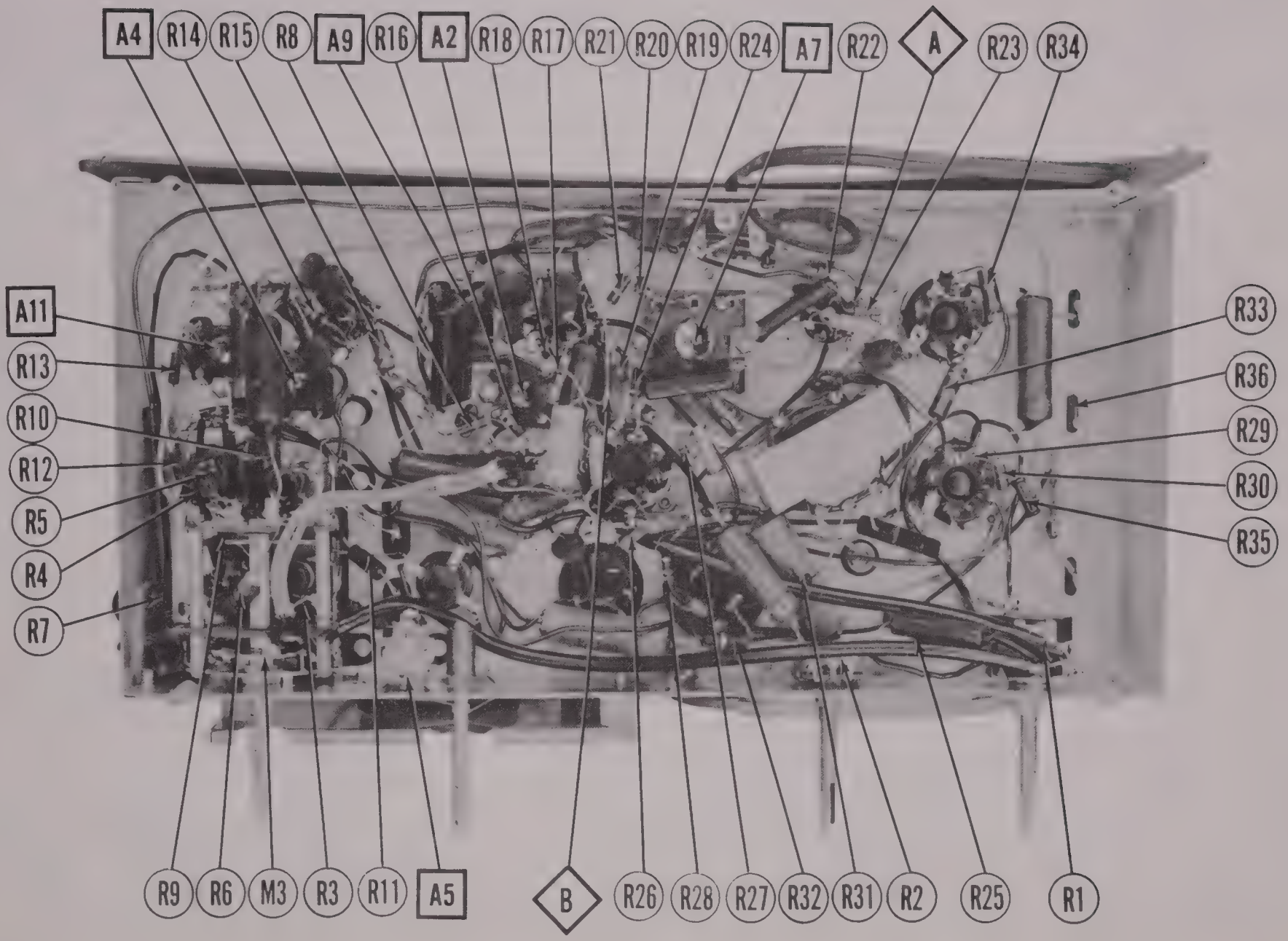
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R23
R34
A11
R13
R10
R12
R5
R4
R7
R33
R36
R29
R30
R35
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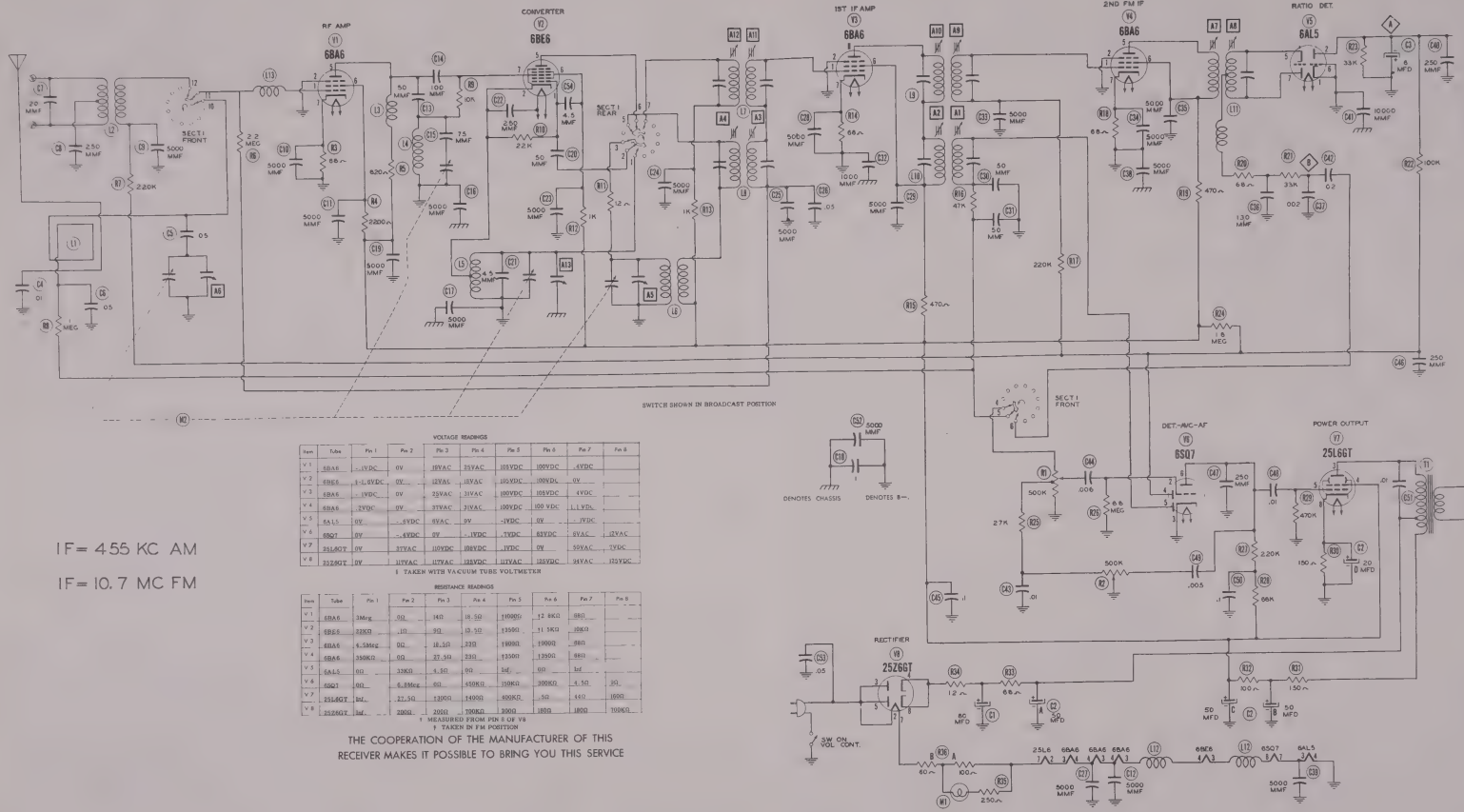
R31
R2
R25
R1



IF = 4.55 KC AM

IF = 10.7 MC FM

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6BA6	-.1VDC	0V	115VAC	25VAC	105VDC	100VDC	4VDC	
V 2	6BE6	1-1.6VDC	0V	122VAC	115VAC	105VDC	100VDC	0V	
V 3	6BA6	-.1VDC	0V	25VAC	31VAC	100VDC	105VDC	4VDC	
V 4	6BA6	.2VDC	0V	37VAC	31VAC	100VDC	100 VDC	1.1 VDC	
V 5	6AL5	0V	-.6VDC	6VAC	9V	-1VDC	0V	-.1VDC	
V 6	6SQ7	0V	-.4VDC	0V	-.1VDC	.7VDC	83VDC	6VAC	122VAC
V 7	25L6GT	0V	117VAC	110VDC	108VDC	.1VDC	0V	59VAC	7VDC
V 8	25Z6GT	0V	117VAC	117VAC	125VDC	117VAC	125VDC	94VAC	125VDC

† TAKEN WITH VACUUM TUBE VOLTMETER

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6BA6	3Meg	0Ω	140	18.5Ω	1900Ω	12.8KΩ	88Ω	
V 2	6BE6	22KΩ	10	9Ω	13.5Ω	1350Ω	11.5KΩ	108Ω	
V 3	6BA6	4.5Meg	0Ω	18.5Ω	22Ω	1900Ω	1900Ω	88Ω	
V 4	6BA6	350KΩ	0Ω	27.5Ω	23Ω	1350Ω	1250Ω	88Ω	
V 5	6AL5	0Ω	33KΩ	4.5Ω	0Ω	Inf.	0Ω	Inf.	
V 6	6SQ7	0Ω	6.8Meg	0Ω	450KΩ	150KΩ	300KΩ	4.5Ω	0Ω
V 7	25L6GT	Inf.	27.5Ω	1300Ω	1400Ω	400KΩ	5Ω	140	1000
V 8	25Z6GT	Inf.	200Ω	200Ω	700KΩ	300Ω	180Ω	180Ω	190KΩ

† MEASURED FROM PIN 8 OF V8

† TAKEN IN FM POSITION

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not connect a .1MFD capacitor in series with low side of signal generator and B-.
To set pointer turn tuning cap fully closed and set pointer to last reference mark at low frequency end of dial.

AM ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated aligment screwdriver for adjusting.
In steps 2 and 3, fashion a loop of several turns of wire and radiate the signal from the signal generator into the loop of the receiver.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to pin 7 (Grid) of 6BE6 (V2). Low side to B-.	455KC (400 ∿Mod)	AM (CCW)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If two peaks are noted on any adjustment, use the one with the slug farthest out.
2.		Loop	1620KC	"	"	"	A5	Adjust for maximum output.
3.		Loop	1400KC	"	Tune for max. output.	"	A6	Adjust for maximum output.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (± 1%) resistors in series from point Ⓐ to B-. The junction of these two resistors is alignment point Ⓒ as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	250MMF	High side to pin 1 (Grid) of 6BA6 (V4). Low side to B-.	10.7MC (Unmod.)	FM (CW)	Tuning gang fully open	DC Probe to Point Ⓐ. Common to B-.	A7	Adjust for maximum deflection.
5.	250MMF	"	"	"	"	DC Probe to Point Ⓑ. Common to Point Ⓒ.	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
6.	250MMF	High side to Pin 1 (Grid) of 6BA6 (V3). Low side to B-.	"	"	"	DC Probe to Point Ⓐ. Common to B-.	A9, A10	Adjust for maximum deflection.
7.	250MMF	High side to pin 7 (Grid) of 6BE6 (V2). Low side to B-.	"	"	"	"	A11, A12	"

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	250MMF	High side to pin 1 (Grid) of 6BA6 (V3). Low side to B-.	10.7MC (450KC Mod.)	FM (CW)	Tuning gang fully open	DC Probe to Point Ⓐ. Low side to B-.	A7, A9, A10	Disconnect stabilizer capacitor C3. Adjust for maximum amplitude and symmetry as per Fig 1.
5.	250MMF	High side to pin 7 (Grid) of 6BE6 (V2). Low side to B-.	"	"	"	"	A11, A12	"
6.	250MMF	"	"	"	"	Vert. Amp. to Point Ⓑ. Low side to B-.	A8	Reconnect capacitor C3. Adjust A8 so 10.7MC occurs at center of crossover lines as per Fig 2. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines. Continue with step 8.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
8.	Two 120 Ω carbon res.	Across "FM Ant." terminals with 120Ω in each lead.	106MC (Unmod.)	FM	106MC	DC Probe to Point Ⓐ. Common to B-.	A13	Adjust for maximum deflection
9.	"	"	90MC	"	90MC	"		Slighty bend the end plates of the FM RF section of tuning gang for maximum deflection.

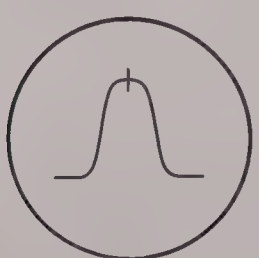


FIG. 1

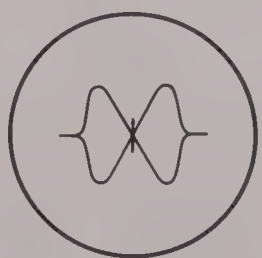


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: KNIGHT PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	RF Amp.	6BA6	6BA6	7BK	
V2	Converter	6BE6	6BE6	7CH	
V3	1st IF Amp.	6BA6	6BA6	7BK	
V4	2nd FM IF Amp.	6BA6	6BA6	7BK	
V5	Ratio Detector	6AL5	6AL5	6BT	
V6	DET.-AVC-AF	6SQ7	6SQ7	8Q	
V7	Power Output	25L6GT	25L6GT	7AC	
V8	Rectifier	25Z6GT	25Z6GT	7Q	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

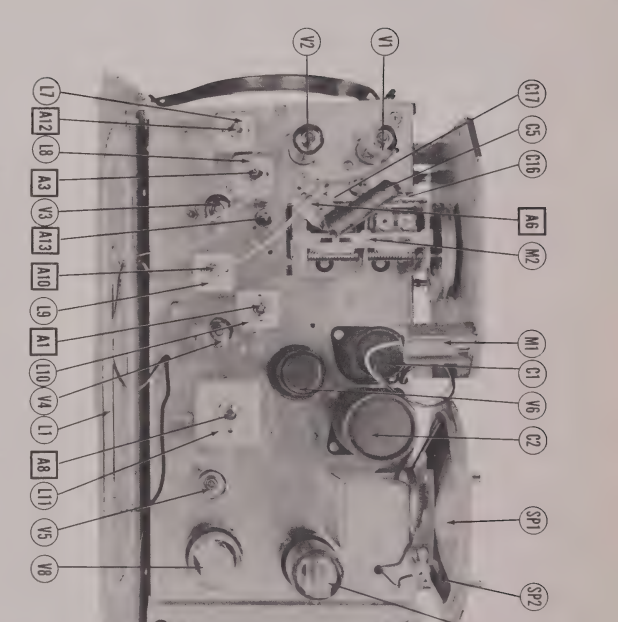
ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: KNIGHT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1	80	150	N-8312	AP20D		UP8015		TVL-1420	Filter
C2A	50	150	N-8313	AF101010D4A		UP55515C		TVL-4425	▲ Filter
B	50	150							■ Filter
C	50	150							▲ Filter
D	20	25							Output Cathode Bypass
C3	6	150	N-1367	PRS150/4		BR415		TVA-1402	Stablizing Cap
C4	.01	400	N-1344	P488-01	D6-103	PTE4S1	821-01	4TM-S1	Ant. Isolation
C5	.05	400	N-1345	P488-05	DF-503	PTE4S5		4TM-S5	Tuning Cap. Isolation
C6	.05	400	N-1345	P488-05	DF-503	PTE4S5		4TM-S5	AVC Filter
C7	20		N-6564	SI20	D6-200	5WSQ2	GP1K-20	MS-42	Fixed Trimmer
C8	250		N-6488	SI250	D6-251	5WST25	GP2K-250	19C13	Ant. Isolation
C9	5000		N-8272	BPD-005	DD-502	1D5D5	81L-005	29C1	AVC Filter
C10	5000		N-8272	BPD-005	DD-502	1D5D5	81L-005	29C1	RF Cathode Bypass
C11	5000		N-8272	BPD-005	DD-502	1D5D5	81L-005	29C1	RF Screen Bypass
C12	5000		N-8272	BPD-005	DD-502	1D5D5	81L-005	29C1	RF Fil. Bypass
C13	50		N-8385	SI50	D6-500	5WSQ5	GP1K-50	19C28	RF Coupling
C14	100		N-8015	SI100	D6-101	5WST1	GP1K-100	19C11	RF Coupling
C15	75		N-8484	SITSN750	TCN-75		N750L-75		Fixed Padder
C16	5000		N-8272	BPD-005	DD-502	1D5D5	81L-005	29C1	RF Bypass
C17	5000		N-8272	BPD-005	DD-502	1D5D5	81L-005	29C1	RF Bypass
C18	.1	200	N-1351	P288-1	DF-104	PTE4P1		72P52	Line Isolation
C19	5000		N-8272	BPD-005	DD-502	1D5D5	81L-005	29C1	RF Bypass
C20	50		N-8385	SI50	D6-500	5WSQ5	GP1K-50	19C28	Osc. Grid Cap.
C21	4.5		N-8483						Fixed Trimmer *
C22	250		N-8488	SI250	D6-251	5WST25	GP2K-250	19C13	Conv. Fil. Bypass
C23	5000		N-8272	BPD-005	DD-502	1D5D5	81L-005	29C1	Osc. Anode Bypass
C24	5000		N-8272	BPD-005	DD-502	1D5D5	81L-005	29C1	Conv. Plate Decoupling
C25	5000		N-8272	BPD-005	DD-502	1D5D5	81L-005	29C1	AVC Filter
C26	.05	400	N-1346	P488-05	DF-503	PTE4S5		4TM-S5	AVC Filter
C27	5000		N-8272	BPD-005	DD-502	1D5D5	81L-005	29C1	1st IF Fil. Bypass
C28	5000		N-8272	BPD-005	DD-502	1D5D5	81L-005	29C1	1st IF Cathode Bypass
C29	5000		N-8272	BPD-005	DD-502	1D5D5	81L-005	29C1	1st IF Decoupling
C30	50		N-8375	SI50	D6-500	5WSQ5	GP1K-50	19C28	Diode RF Filter
C31	50		N-8375	SI50	D6-500	5WSQ5	GP1K-50	19C28	Diode RF Filter
C32	10000		N-8482	BPD-01	DD-103	PTE4S1	821-01	36C1	RF Bypass
C33	5000		N-8272	BPD-005	DD-502	1D5D5	81L-005	29C1	AVC Filter
C34	5000		N-8272	BPD-005	DD-502	1D5D5	81L-005	29C1	2nd IF Cathode
C35	5000		N-8272	BPD-005	DD-502	1D5D5	81L-005	29C1	2nd IF Decoupling
C36	130		N-8487	SI120	D6-121	5WST15	GP2K-120	19C29	Diode Load Cap.
C37	.002	600	N-8377	P688-002	D6-202	PTE6D2	GP2M-002	67M-D2	DE-emphasis
C38	5000		N-8272	BPD-005	DD-502	1D5D5	81L-005	29C1	RF Bypass
C39	5000		N-8272	BPD-005	DD-502	1D5D5	81L-005	29C1	Ratio Det. Fil.
C40	250		N-8488	SI250	D6-251	5WST25	GP2K-250	19C13	RF Bypass
C41	10000		N-8482	BPD-01	DD-103	PTE4S1	821-01	36C1	RF Bypass
C42	.02	400	N-1376	P488-02	DF-203	PTE4S2		4TM-S2	Audio Coupling
C43	.01	400	N-1344	P488-01	D6-103	PTE4S1	821-01	4TM-S1	Tone Comp.
C44	.006	600	N-4694	P688-006	D6-562	PTE6D6	81L-005	6TM-D6	Audio Coupling
C45	.1	200	N-1351	P288-1	DF-104	PTE4P1		2TM-P1	RF Bypass
C46	250		N-8488	SI250	D6-251	5WST25	GP2K-250	19C13	RF Bypass
C47	250		N-8488	SI250	D6-251	5WST25	GP2K-250	19C13	AF Amp. Plate Bypass
C48	.01	400	N-1344	P488-01	D6-103	PTE4S1	821-01	4TM S1	Audio Coupling
C49	.005	600	N-4694	P688-005	D6-502	PTE6D5	81L-005	6TM-D5	Tone Compensation
C50	.1	200	N-1351	P288-1	DF-104	PTE4P1		2TM-P1	AF Amp. Plate Dec.
C51	.01	400	N-1344	P488-01	D6-103	PTE4S1	821-01	4TM-S1	Output Plate Bypass
C52	5000		N-8272	BPD-005	DD-502	1D5D5		29C1	RF Bypass
C53	.05	400	N-1346	P488-05	DF-503	PTE4S5		4TM-S5	Line Filter
C54	4.5			SI5N750	TC2-4.7		N750K-5		Osc. Feedback *

* Not used in all models

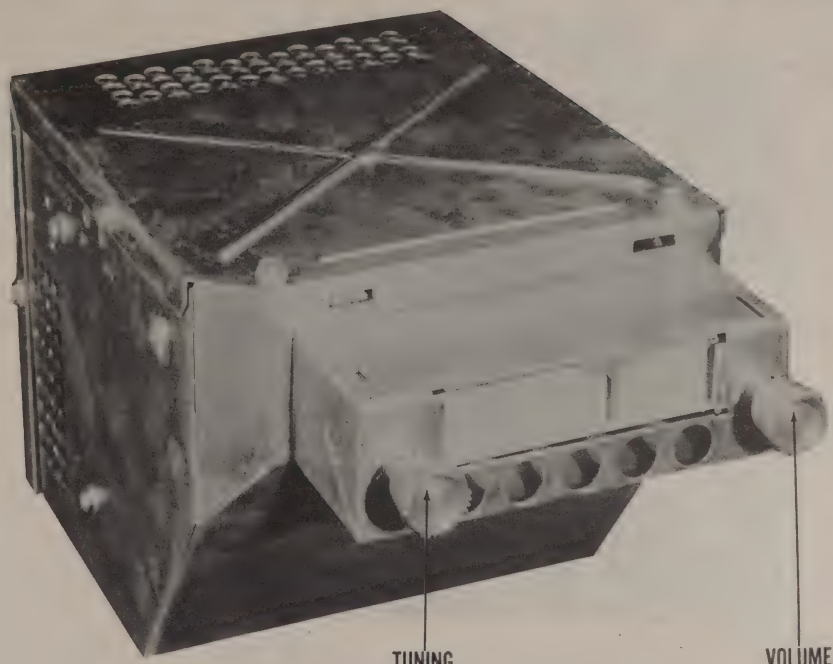
SET 1218

FOUR 6

CHASSIS—TOP VIEW



PHILCO
MODEL CR-503



PHILCO
MODEL CR-503

PHILCO MODEL CR-503

TRADE NAME	Philco, Model CR-503
MANUFACTURER	Philco Corp., Tioga & "C" Sts., Philadelphia, Pa.
TYPE SET	Battery operated Universal Automotive Superdeterodyne Receiver
TUBES (SIX)	Types 6BA6 RF Amp., 6BE6 Converter, 6BA6 IF Amp., 6AV6 Det. - AVC - AF, 6AG5 Power Output, 6X4 Rectifier
POWER SUPPLY	6 Volt Storage Battery — RATING 6.6 Amp. @ 6 Volts DC
TUNING RANGE—BROADCAST	540-1605 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning slugs fully in and set pointer against the stop on the left hand end of the pointer slide. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05Mfd.	High side to pin 7 (Grid) of 6BE6 (V2). Low side to chassis	455KC (400Ω mod)	Tuning cores fully in. (counter-clockwise)	Across voice coil	A1, A2, A3, A4	Adjust for maximum output
2.	Two 30 mmf capacitors	Connect one 30 mmf capacitor between ant. connection and chassis. Connect gen. high side thru other 30mmf capacitor to ant. connection. Low side to chassis.	1605KC	Tunning cores fully out. (clockwise)	Across voice coil	A5, A6, A7	"
3.	After set is installed in car, fully extend antenna and tune in a weak station near 1400 KC. Adjust A7 for maximum volume.						

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PARTS LIST AND DESCRIPTIONS

PHILCO MODEL CR-503

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		PHILCO PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	6BA6	6BA6	7BK	
V2	Converter	6BE6	6BE6	7CH	
V3	IF Amplifier	6BA6	6BA6	7BK	
V4	Det. - AVC - AF	6AV6	6AV6	7BT	
V5	Power Output	6AQ5	6AQ5	7BZ	
V6	Rectifier	6X4	6X4	5BS	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	PHILCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	15	350	61-0089A	AF331SA		UP15S135C		TVL-3630	■ Filter
B	10	350							▲ Filter
C	20	25							Output Cathode
C2	.047	400	45-3505-45	P488-047	DF-503	PTE4S5		4TM-S47	AVC Filter
C3	330		62-133001001	SI330	D6-331	5W5T3	GP2K-330	19C14	RF Bypass
C4	.047	400	45-3505-45	P488-047	DF-503	PTE4S5		4TM-S47	Decoupling
C5	220		62-122001001	SI220	D6-221	5W5T25	GP2K-220	19C13	Diode RF Filter
C6	.0047	600	45-3505-56	P688-0047	D6-472	PTE6D5	GP2M-0047	6TM-D47	Audio Coupling
C7	220		62-122001001	SI220	D6-221	5W5T25	GP2K-220	19C13	AF Amp. Plate
C8	.01	400	45-3505-41	P488-01	D6-103	PTE4S1	821-01	4TM-S1	Audio Coupling
C9	.022	600	45-3505-60	P688-022	DF-203	PTE6S2		6TM-S22	Output Plate
C10	330		62-133001001	SI330	D6-331	5W5T3	GP2K-330	19C14	Hash Filter
C11	330		62-133001001	SI330	D6-331	5W5T3	GP2K-330	19C14	Hash Filter
C12	.5	120	61-0137	P185-5				68P20	Hash Filter
C13	.0047	1600	30-4061-1	P1688-0047		PTE16D5		MB-D47	Buffer

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	PHILCO PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
R1	350KΩ	½	33-5556-7				Volume Control and SW

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	PHILCO PART No.	IRC PART No.	
R2	330Ω	½	66-1338340	BTS-330	RF Amp. Cathode
R3	10KΩ	½	66-3108340	BTS-10K	RF Amp. Plate
R4	820KΩ	½	66-4828340	BTS-820K	AVC Network
R5	22KΩ	½	66-3228340		Osc Grid
R6	470Ω	½	66-1478340	BTS-470	IF Amp Cathode
R7	27KΩ	1	66-3274340	BTA-27K	Screen Loading
R8	2.2Meg	½	66-5228340	BTS-2.2Meg	AVC Network
R9	10Meg	½	66-6108340	BTS-10Meg	AF Amp Grid
R10	220KΩ	½	66-4228340	BTS-220K	AF Amp Plate
R11	470KΩ	½	66-4478340	BTS-470K	Output Grid
R12	270Ω	1	66-1274340	BTA-270	Output Cathode
R13	2200Ω	1	66-2224340	BTA-2200	Filter
R14	82Ω	1	66-0824340	BW-1-82	Hash Suppressor
R15	82Ω	1	66-0824340	BW-1-82	Hash Suppressor

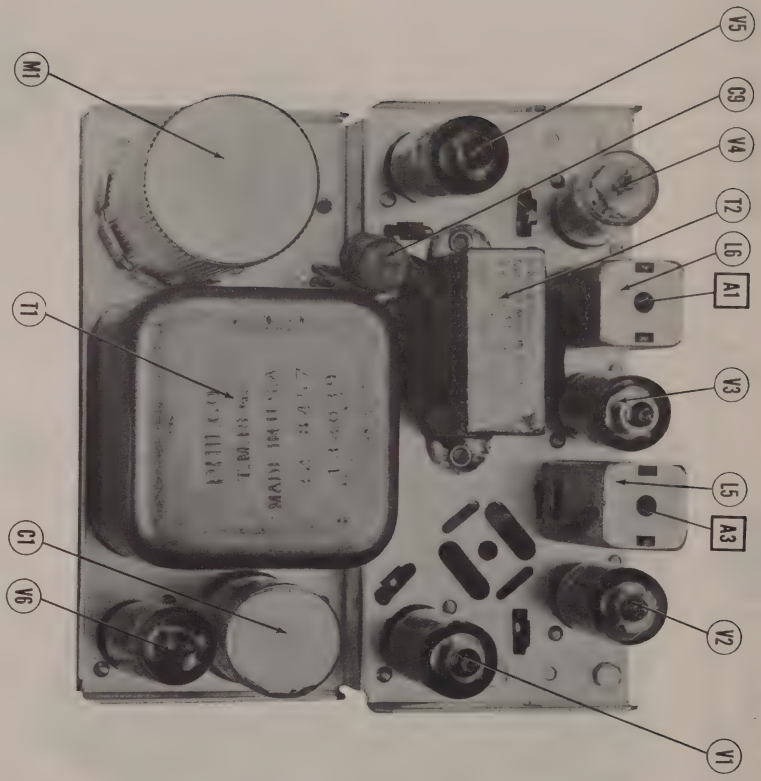
TRANSFORMER (VIBRATOR)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	PHILCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	6.3VDC @ 4.5A	560VCT .045ADC			32-8457			VT-4

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		PHILCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	5KΩ	4.1Ω	350Ω	.3Ω	32-8315-2	A-3877 ①		RO-8	① File out mounting holes

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA PHILCO PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD	V. C. IMP.	36-1638	ST108	6A15	
SP1	PM	4.1Ω		Mod P6-X		
	CONE DIA.	V. C. DIA.				
SP2	5 15/16	9/16				

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA PHILCO PART No.	MEISSNER PART No.	IRC PART No.	NOTES
L1	Ant. Choke	4Ω		32-4422-24		CL-1	5.6 Microhenries
L2	Ant. Coil	12Ω					Part of Tuner Part # 76-6011
L3	RF Coil	12Ω					Part of Tuner Part # 76-6011
L4	Osc. Coil	.7Ω	3Ω				Part of Tuner Part # 76-6011
L5	1st IF	21Ω	21Ω	32-4160-6A			
L6	2nd IF	16Ω	16Ω	32-4161A			
L7	Hash Choke	.2Ω		32-1374			
L8	Hash Choke	.1Ω		32-4170			

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA PHILCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	RADIART PART No.	INSTALLATION NOTES
M1	INT	6.3V	115v	83-0025	A-100	5326	5326	

FUSES

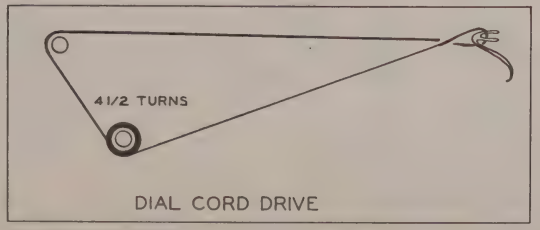
ITEM No.	TYPE	RATING	REPLACEMENT DATA PHILCO PART No. FUSE	PHILCO PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	REMARKS
M2	SFE	14A	45-2559		307014	155014	

DIAL LIGHT

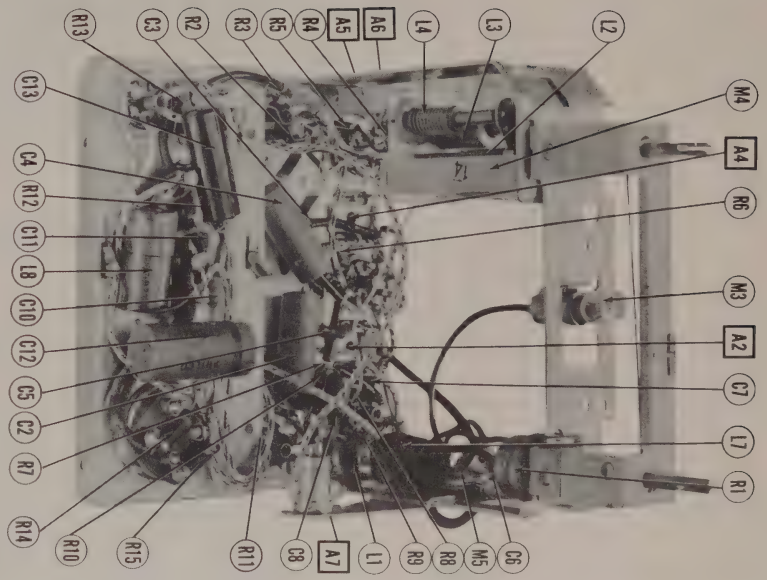
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA PHILCO PART No.		INSTALLATION NOTES
M3	Bayonet	6-8	.15	Brown	None		Type Number 47

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
M4	Tuning unit	76-6011	
M5	Spark Plate	30-1235	
	Knob Assby.	27-4387-15	
	Dial Pointer	56-4362-10	



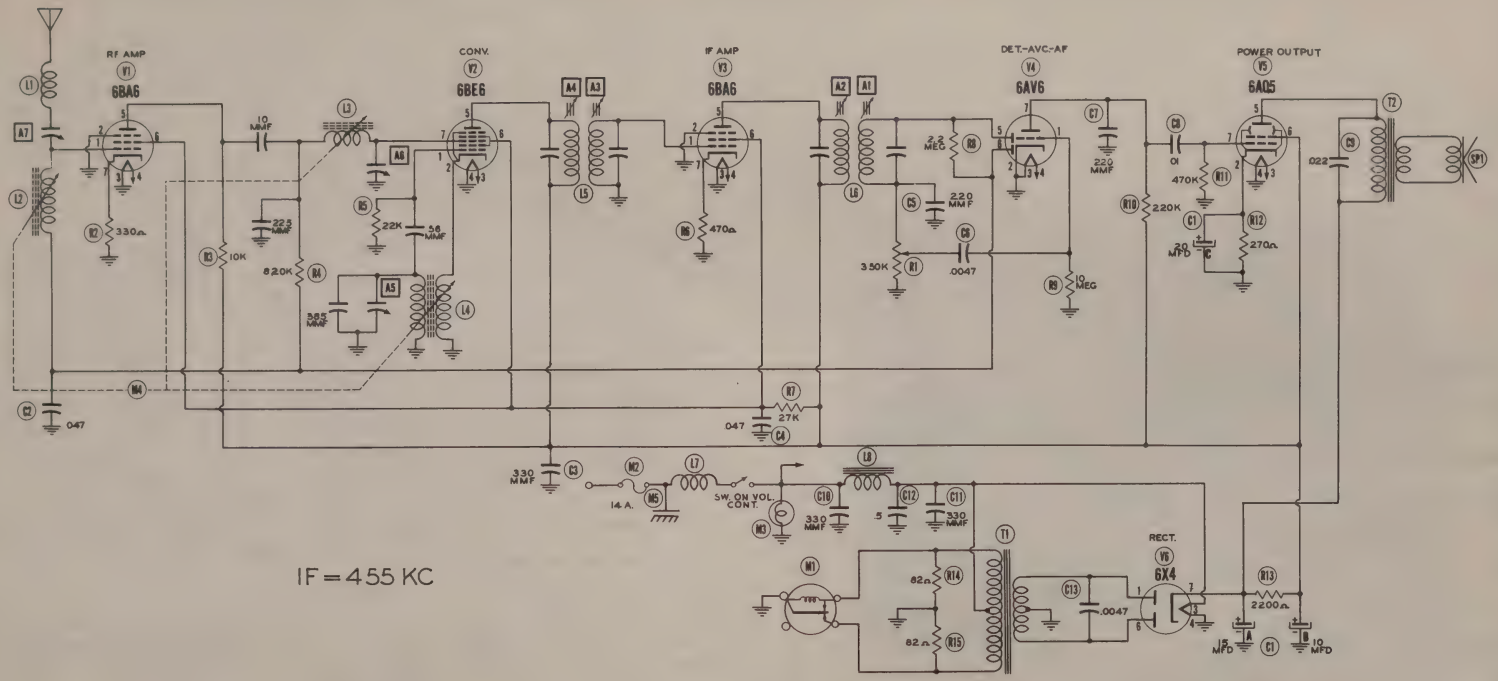
CHASSIS—BOTTOM VIEW



SET 128 FOLDER 10

PHILCO MODEL CR-503

PHILCO MODEL CR-503



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	6BA6	-.6VDC	0V	0V	6.3VDC	170VDC	65VDC	1.1VDC
V 2	6BE6	§ -2.9VDC	0V	6.3VDC	0V	200VDC	65VDC	-.8VDC
V 3	6BA6	0V	0V	0V	6.3VDC	200VDC	65VDC	1.7VDC
V 4	6AV6	-.5VDC	0V	0V	6.3VDC	-.6VDC	-.4VDC	80VDC
V 5	6AQ5	0V	9.5VDC	6.3VDC	0V	320VDC	200VDC	0V
V 6	6X4	260VAC	0V	6.3VDC	0V	0V	260VAC	225VDC

§ TAKEN WITH VACUUM TUBE VOLTMETER

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	6BA6	2.5Meg	0Ω	0Ω	.4Ω	†12KΩ	†30KΩ	330Ω
V 2	6BE6	22KΩ	.7Ω	.4Ω	0Ω	†2.2KΩ	†30KΩ	3.3Meg
V 3	6BA6	2Ω	0Ω	0Ω	.4Ω	†2.2KΩ	†30KΩ	470Ω
V 4	6AV6	10Meg	0Ω	0Ω	.4Ω	2.5Meg	350KΩ	†220KΩ
V 5	6AQ5	470KΩ	270Ω	.4Ω	0Ω	†350Ω	†2.2KΩ	470KΩ
V 6	6X4	40Ω	Inf.	.4Ω	0Ω	Inf.	40Ω	50KΩ

† MEASURED FROM PIN 7 OF V6

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1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Battery voltage maintained at 6.3 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

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50-T1476, 50-T1477, 50-T1478, 50-T1479, 50-T1481, 50-T1482, 50-T1484

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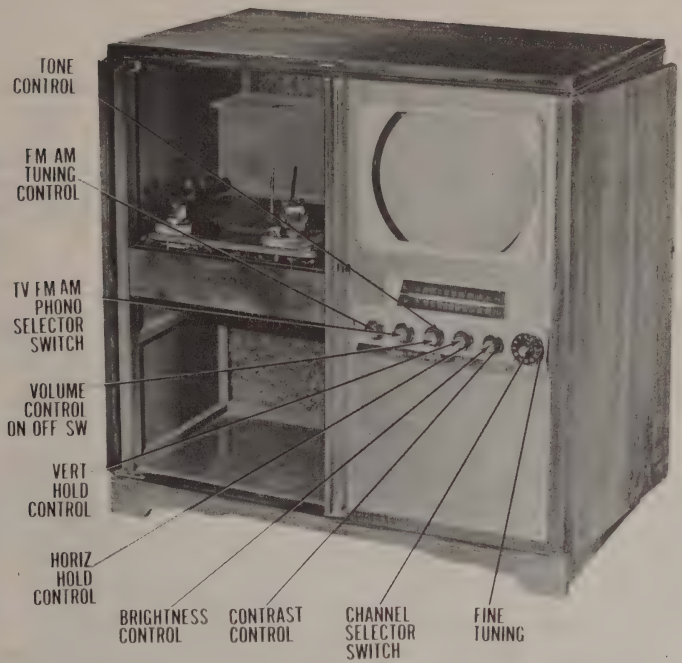

PHILCO MODEL 50-T1476

TRADE NAME	Philco, Models 50-T1476, 50-T1477, 50-T1478, 50-T1479, 50-T1481, 50-T1482, 50-T1484		
MANUFACTURER	Philco Corp., Tioga and "C" Sts., Philadelphia, Pa.		
TYPE SET	TV-AM-FM-Phono Combination Receiver		
TUBES	Twenty Eight		
POWER SUPPLY	110-120 Volts AC- 60 Cycle	RATING	(TV) 2.1 Amp. @ 117 Volts AC (Radio) 1.8 Amp. @ 117 Volts AC
TUNING RANGE	(TV) Channels 2 thru 13 (FM) 88-108MC (AM) 540-1620KC		

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ALL MODELS EXCEPT 50-T1477 USE PHILCO RECORD CHANGER UNIT M-20 (PHOTOFACT SET NO. 103 FOLDER 11 OR RECORD CHANGER MANUAL CM-3)
MODEL 50-T1477 USES PHILCO MODEL M-12C (PHOTOFACT SET NO. 109 FOLDER 9 OR RECORD CHANGER MANUAL CM-3)

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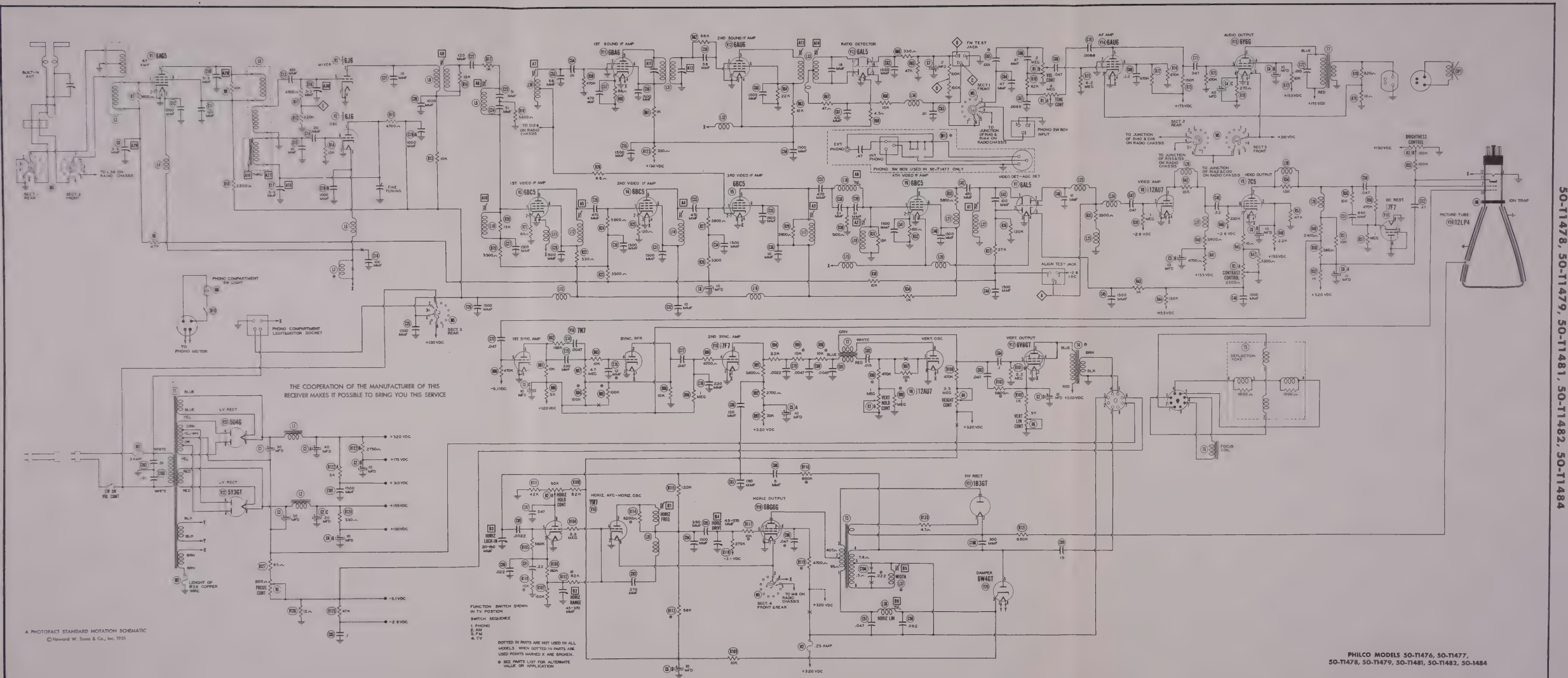
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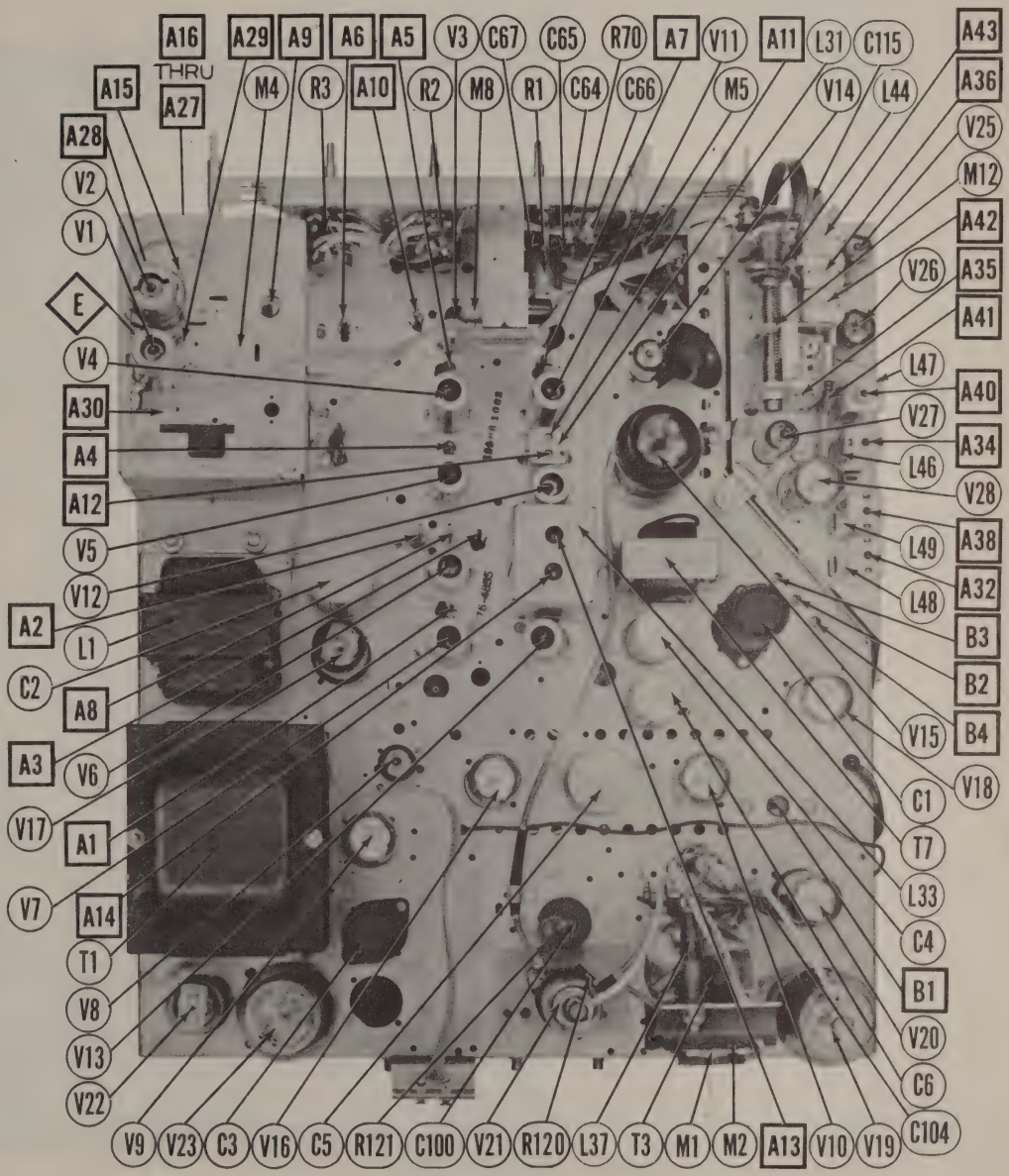
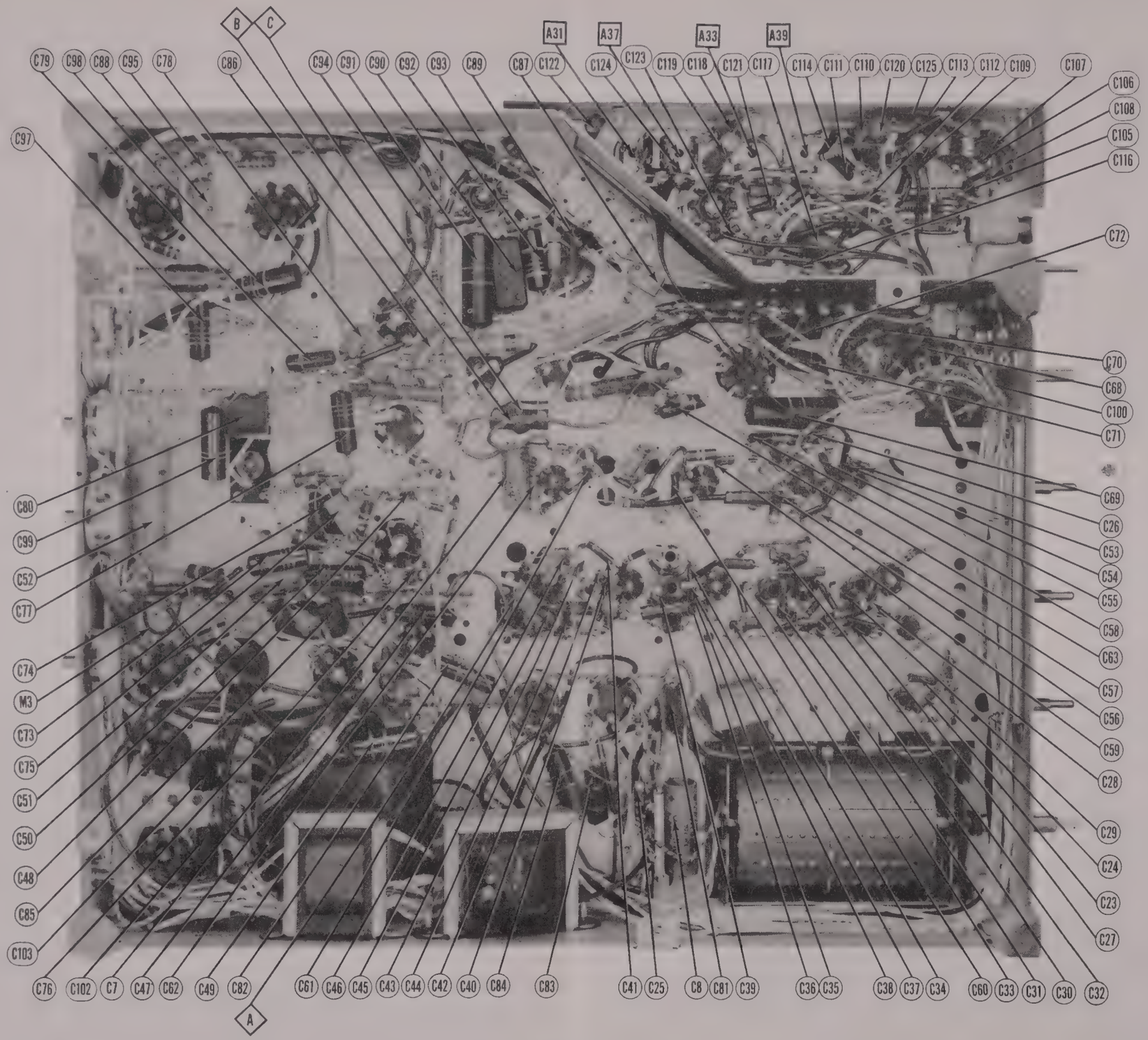
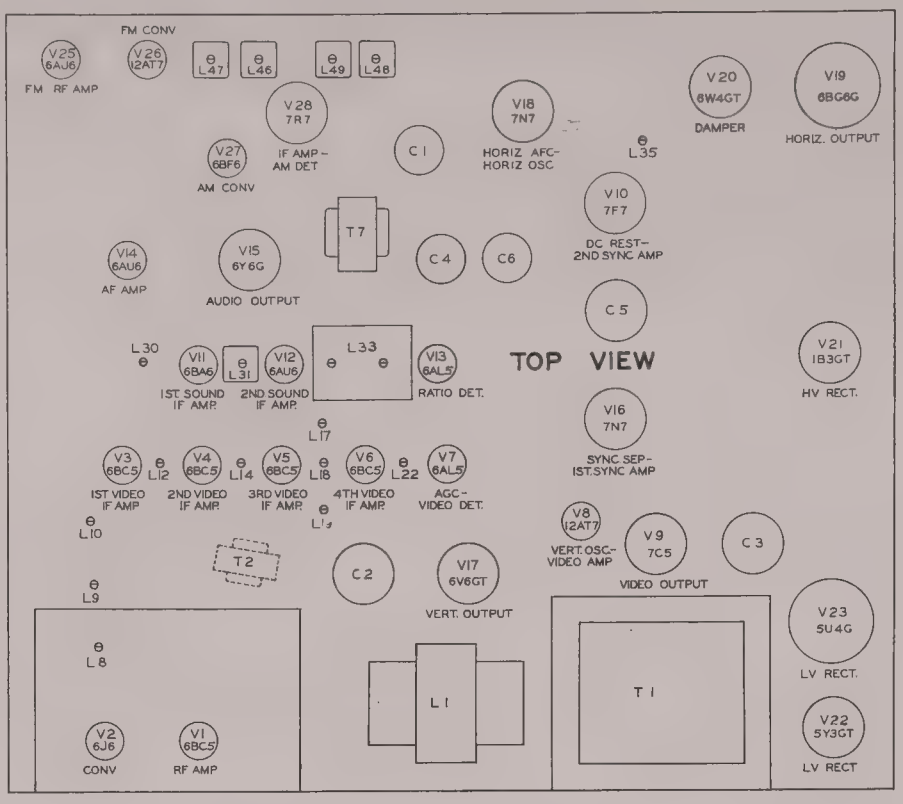
PHILCO MODELS 50-T1476, 50-T1477, 50-T1478, 50-T1479, 50-T1481, 50-T1482, 50-T1484

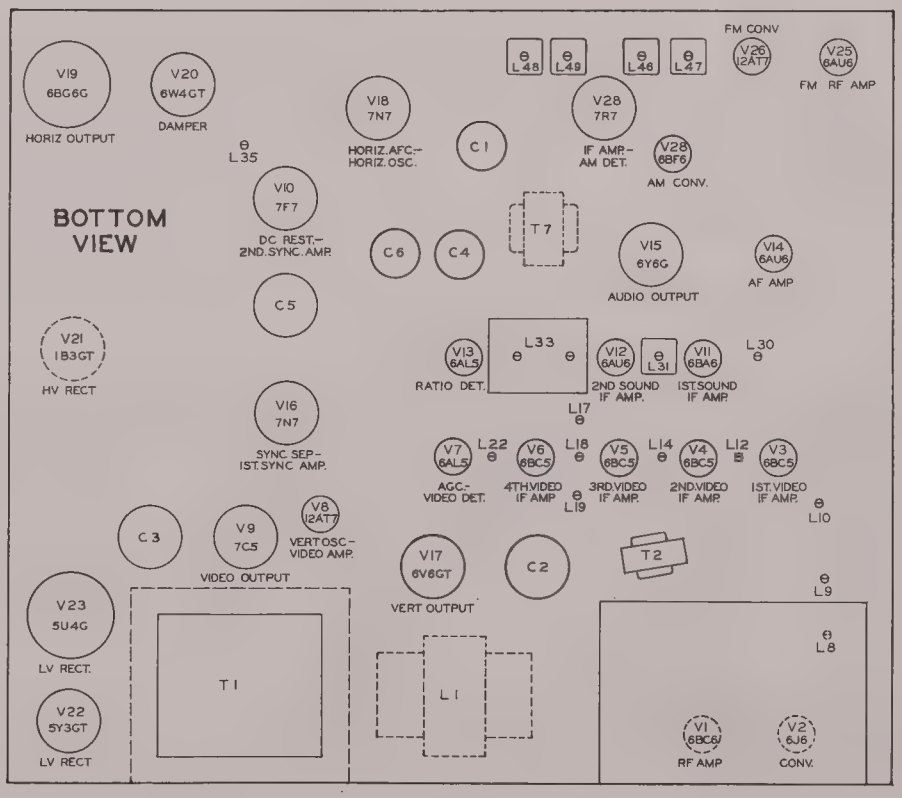


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION





TUBE PLACEMENT CHART

TV ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The end of the high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube to disable the high voltage.

Pre-set the adjustments as follows:

A-11 and A12 fully clockwise

A10 fully counter-clockwise (maximum clockwise).

A3, A8 and A6 so the top of the adjusting screw id 5/8 inch above the coil mount.

Turn the function selector switch to "TV"

VIDEO IF ALIGNMENT

Remove the converter tube (V2) and replace it with a 6J6 which has pin 1 removed, this will prevent the possibility of erroneous indications caused by the local oscillator.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	Not used	25.5MC (Unmod.)	Any	USE VTVM DC probe to Point (A). Common to chassis.	A1	Adjust for maximum deflection.
2.	"	"	"	24.5MC	"	"	A2	"
3.	"	"	"	25MC	"	"	A3	"
4.	"	"	"	26.6MC	"	"	A4	"
5.	"	"	"	23.25MC	"	"	A5	"
6.	"	"	"	28.1MC	"	"	A6	Adjust for MINIMUM deflection.
7.	"	"	"	22.1MC	"	"	A7, A8	Adjust for MINIMUM deflection. Detune one coil with a tuning wand or by placing finger on windings while adjusting the other coil.
8.	"	"	"	24.25MC	"	"	A9	Adjust for maximum deflection.
9.	"	"	25MC (10MC SWP)	23.25MC 23.5MC 25.75MC 26.6MC	"	Vert. amp. to Point (A). Low side to chassis.	A10	Adjust for response curve similar to figure 1. If necessary retouch A1 thru A5 and A9 for proper response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±1%) resistors in series from Point B to chassis. The junction of these two resistors is alignment Point D as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
10.	Direct	High side to an ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	22.1MC (Unmod.)	Any	DC probe to Point (B). Common to chassis.	A 11, A12	Adjust both trimmers counter-clockwise until indication is reached and then adjust each for maximum deflection.
11.	"	"	"	"	"	A13	Adjust for maximum deflection.
12.	"	"	"	"	DC probe to Point (C). Common to Point (D).	A14	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Direct	High side to an ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	22.1MC (450KC SWP)	22.1MC	Any	Vert. amp. to Point (B). Low side to chassis.	A 11, A12	Disconnect stabilizer capacitor C7. Adjust both trimmers counter-clockwise until an indication on scope is observed.
11.	"	"	"	"	"	Vert. amp. to Point (C). Low side to chassis.	A14	Reconnect capacitor C7. Adjust A14 so 22.1 MC occurs at center of crossover lines as per figure 2.
12.	"	"	"	"	"	"	A 11, A12	Adjust for maximum amplitude and straightness of crossover lines with symmetrical peaks.

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.

Complete oscillator alignment may not be necessary. If the oscillator seems to be off frequency approximately the same amount for a majority of the channels, it may be possible to correct them in one step using A15. It should be noted that this is an all channel oscillator circuit adjustment and should not be adjusted for any individual channel. If adjustment of A15 will not bring all channels within the range of the fine tuning control, it will be necessary to adjust the channel strip adjustment for each channel that is off frequency. The channel strip adjustment screws are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is tuned to each channel.

The sweep generator output lead should be terminated with its characterisitic impedance, usually 50 ohms.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
13.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	215.75MC (Unmod.)	13	DC probe to Point (C). Common to Point (D).	A16	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
			209.75MC	12		A17	
			203.75MC	11		A18	
			197.75MC	10		A19	
			191.75MC	9		A20	
			185.75MC	8		A21	
			179.75MC	7		A22	
			87.75MC	6		A23	
			81.75MC	5		A24	
			71.75MC	4		A25	
			65.75MC	3		A26	
			59.75MC	2		A27	

TV ALIGNMENT INSTRUCTIONS (CONT.)

RF ALIGNMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
14.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	207MC	205.25MC	12	Vert. amp. to Point (E). Low side to chassis.	A28, A29 A30	Adjust for response curve similar to figure 3 with markers above 90%.
15.	"	"	213MC (10MC SWP)	211.25MC 215.75MC	13	"		Check all channels for response similar to figure 3. If markers fall below 70% on any channel, make slight adjustment of A28, A29 and A30 with channel switch set for that channel. Recheck all channels to see that they have not been seriously effected.
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			177MC (10MC SWP)	175.25MC 179.75MC	7			
			85MC (10MC SWP)	83.25MC 87.75MC	6			
			79MC (10MC SWP)	77.25MC 81.75MC	5			
			69MC (10MC SWP)	67.25MC 71.75MC	4			
			63MC (10MC SWP)	61.25MC 65.75MC	3			
			57MC (10MC SWP)	55.25MC 59.75MC	2			

FIG.1

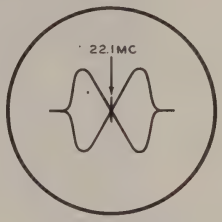


FIG. 2

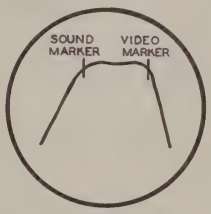


FIG.3

RADIO ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set dial pointer, turn tuning gang fully closed and set pointer to the last index mark at the left hand end of the dial backplate opening.

AM ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
16.	.1MFD	High side to pin 7 (grid) of 6BE6 (V27). Low side to chassis.	455KC (400 ∿ Mod.)	AM (Second pos. CW)	Tuning gang fully open	Across voice coil	A31, A32, A33, A34	Adjust for maximum output.
17.		Loop	1620KC	"	"	"	A35	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
18.		Loop	1500KC	"	Tune for max. output	"	A36	"

FM IF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
19.	.1MFD	High side to pin 2 (grid) of 12AT7 (V26). Low side to chassis.	22.1MC (Unmod.)	FM (Third pos. CW)	Tuning gang fully closed	DC probe to Point (B). Common to chassis.	A37, A38, A39, A40	Adjust for maximum deflection

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
20.	.1MFD	High side to ungrounded "FM" antenna terminal. Low side to chassis.	103MC (Unmod.)	FM	Set pointer to second calibration mark from right hand end of backplate opening.	DC probe to Point (B). Common to chassis.	A41, A42, A43	Adjust for maximum deflection.
21.	"	"	92MC	FM	Set pointer to second calibration mark from left hand end of backplate opening.	"	L38, L40 L41	Check coils with a tuning wand. If necessary expand or compress coil turns for maximum deflection. If coils require adjustment repeat steps 20 and 21 until no further improvement can be made.

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BC5	-.7VDC	0V	6.3VAC	0V	110VDC	110VDC	0V		
V 2	6J6	100VDC	85VDC	6.3VAC	0V	-1.7VDC	§-5.4VDC	0V		
V 3	6BC5	-.4VDC	.3VDC	0V	6.3VAC	127VDC	127VDC	.3VDC		
V 4	6BC5	-.4VDC	.6VDC	0V	6.3VAC	130VDC	130VDC	.6VDC		
V 5	6BC5	-.4VDC	.4VDC	0V	6.3VAC	130VDC	130VDC	.4VDC		
V 6	6BC5	0V	1VDC	0V	6.3VAC	85VDC	125VDC	1VDC		
V 7	6AL5	0V	-1.5VDC	0V	6.3VAC	0V	0V	-.6VDC		
V 8	12AU7	110VDC	-.6VDC	0V	6.3VAC	6.3VAC	300VDC 165VDC	-35VDC	0V	0V
V 9	7C5	6.3VAC	300VDC	100VDC	-2.6VDC	0V	-1.2VDC	7.5VDC	0V	
V 10	7F7	6.3VAC	0V	135VDC	.6VDC	0V	0V	.9VDC	0V	
V 11	6BA6	0V	0V	0V	6.3VAC	105VDC	105VDC	1VDC		
V 12	6AU6	-.3 VDC	0V	0V	6.3VAC	65VDC	65VDC	0V		
V 13	6AL5	-.2VDC	-.2VDC	4.6VAC	0V	0V	0V	-.9VDC		
V 14	6AU6	-.4VDC	0V	0V	6.3VAC	80VDC	35VDC	0V		
V 15	6Y6G	0V	6.3VAC	160VDC	135VDC	0V	310VDC	0V	15VDC	
V 16	7N7	6.3VAC	0V	35VDC	-.9VDC	-1VDC	150VDC	0V	0V	
V 17	6V6GT	0V	6.3VAC	310VDC 290VDC	310VDC 290VDC	0V	135VDC	0V	40VDC 25VDC	
V 18	7N7	0V	0V	210VDC	-90VDC	-4VDC	60VDC	-8.2VDC	6.3VAC	
V 19	6BG6G	0V	6.3VAC	0V	-17VDC	-18VDC	310VDC	0V	255VDC	TOP CAP *
V 20	6W4GT	0V	0V	410VDC	0V	320VDC	0V	¶	¶	
V 21	1B3GT	* DO NOT MEASURE								
V 22	5Y3GT	0V	165VDC	0V	180VAC	0V	180VAC	0V	165VDC	
V 23	5U4G	0V	335VDC	0V	320VAC	0V	320VAC	0V	335VDC	
V 24	12LP4	0V	.5VDC	PIN 10 255VDC	PIN 11 130VDC	PIN 12 6.3VAC				

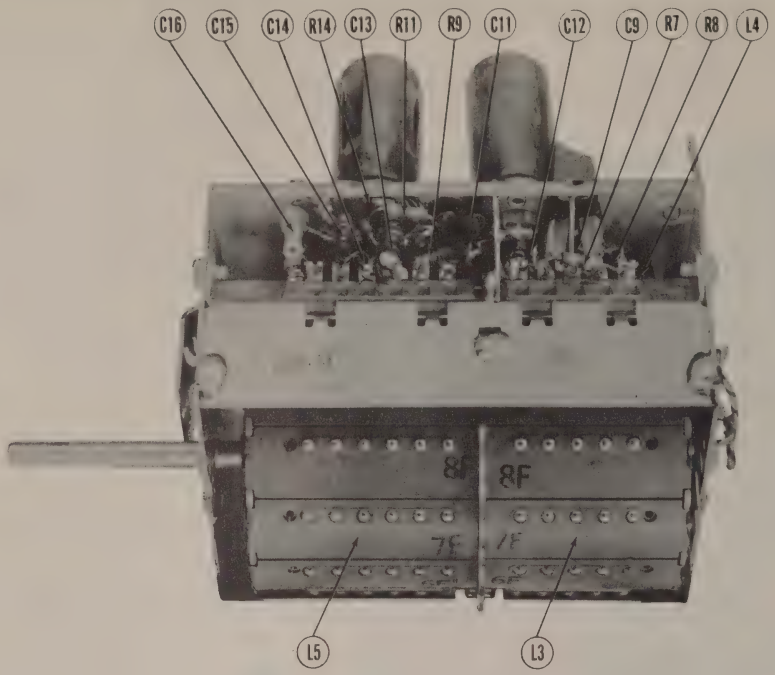
FUNCTION SWITCH IN TV POSITION
FOCUS CONTROL COUNTER CLOCKWISE
§ TAKEN WITH VACUUM TUBE VOLTMETER
* DO NOT MEASURE
¶ 6.3 VAC MEASURED ACROSS FILAMENTS

RESISTANCE READINGS

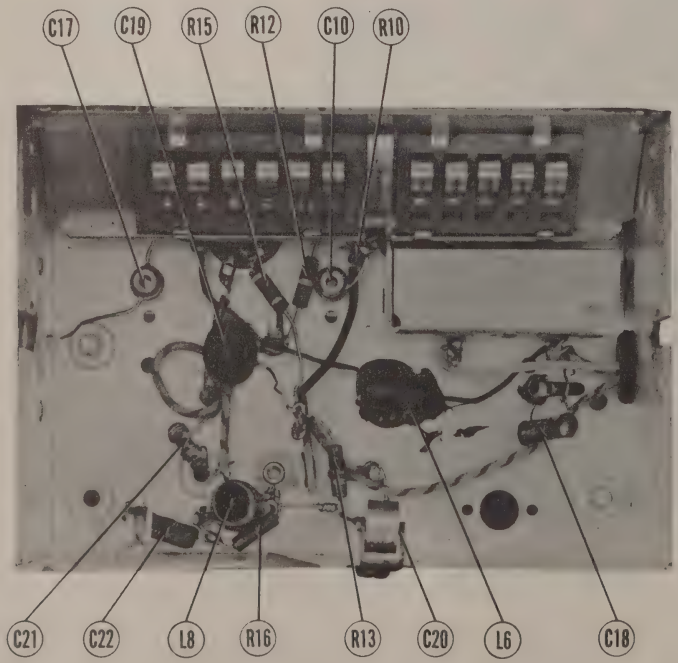
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BC5	205KΩ	0Ω	.1Ω	0Ω	#2.6KΩ	#2.6KΩ	0Ω		
V 2	6J6	#5.1KΩ	#10KΩ	.1Ω	0Ω	225KΩ	10KΩ	0Ω		
V 3	6BC5	165KΩ	68Ω	0Ω	.2Ω	#800Ω	#800Ω	68Ω		
V 4	6BC5	165KΩ	120Ω	0Ω	.1Ω	#480Ω	#480Ω	120Ω		
V 5	6BC5	165KΩ	68Ω	0Ω	.1Ω	#480Ω	#480Ω	68Ω		
V 6	6BC5	.3Ω	100Ω	0Ω	.2Ω	#7KΩ	#1.5KΩ	100Ω		
V 7	6AL5	.3Ω	120KΩ	0Ω	.2Ω	1KΩ	Inf.	3.3KΩ		
V 8	12AU7	#8.7KΩ	1Meg	0Ω	.1Ω	.1Ω	▲470KΩ ▲ 3Meg	1.5Meg	0Ω	0Ω
V 9	7C5	.1Ω	†3.4KΩ	#20KΩ	47KΩ	Inf.	380KΩ	1.6KΩ	0Ω	
V 10	7F7	.1Ω	0Ω	†40KΩ	1Meg	0Ω	0Ω	1Meg	0Ω	
V 11	6BA6	470KΩ	0Ω	0Ω	.1Ω	#1.8KΩ	#1.8KΩ	68Ω		
V 12	6AU6	68KΩ	0Ω	0Ω	.2Ω	#10KΩ	#10KΩ	0Ω		
V 13	6AL5	Inf.	Inf.	2.1Ω	0Ω	0Ω	Inf.	50KΩ		
V 14	6AU6	8.2Meg	0Ω	0Ω	.1Ω	†150KΩ	†270KΩ	10Ω		
V 15	6Y6G	Inf.	.1Ω	†3KΩ	#10KΩ	470KΩ	†5KΩ	0Ω	270Ω	
V 16	7N7	.1Ω	0Ω	†50KΩ	4.7Meg	515KΩ	†16KΩ	0Ω	0Ω	
V 17	6V6GT	Inf.	.1Ω	†1KΩ	†1KΩ	2.2Meg	†80KΩ	0Ω	6KΩ 1KΩ	
V 18	7N7	0Ω	0Ω	▲65KΩ	180KΩ	760KΩ	▲130KΩ	280KΩ	.1Ω	
V 19	6BG6G	Inf.	.1Ω	0Ω	270KΩ	280KΩ	†680KΩ	0Ω	†4.8KΩ	TOP CAP ▲ 120Ω
V 20	6W4GT	Inf.	Inf.	100KΩ	Inf.	†85Ω	Inf.	Inf.	Inf.	
V 21	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP ▲525Ω
V 22	5Y3GT	Inf.	20KΩ	Inf.	65Ω	Inf.	65Ω	Inf.	20KΩ	
V 23	5U4G	Inf.	35KΩ	Inf.	70Ω	Inf.	70Ω	Inf.	35KΩ	
V 24	12LP4	0Ω	1.5Meg	PIN 10 †5KΩ	PIN 11 120KΩ	PIN 12 .1Ω				

FUNCTION SWITCH IN TV POSITION
FOCUS CONTROL COUNTER CLOCKWISE
MEASURED FROM PIN 8 OF V22
† MEASURED FROM PIN 8 OF V 23
▲ MEASURED FROM PIN 3 OF V 20

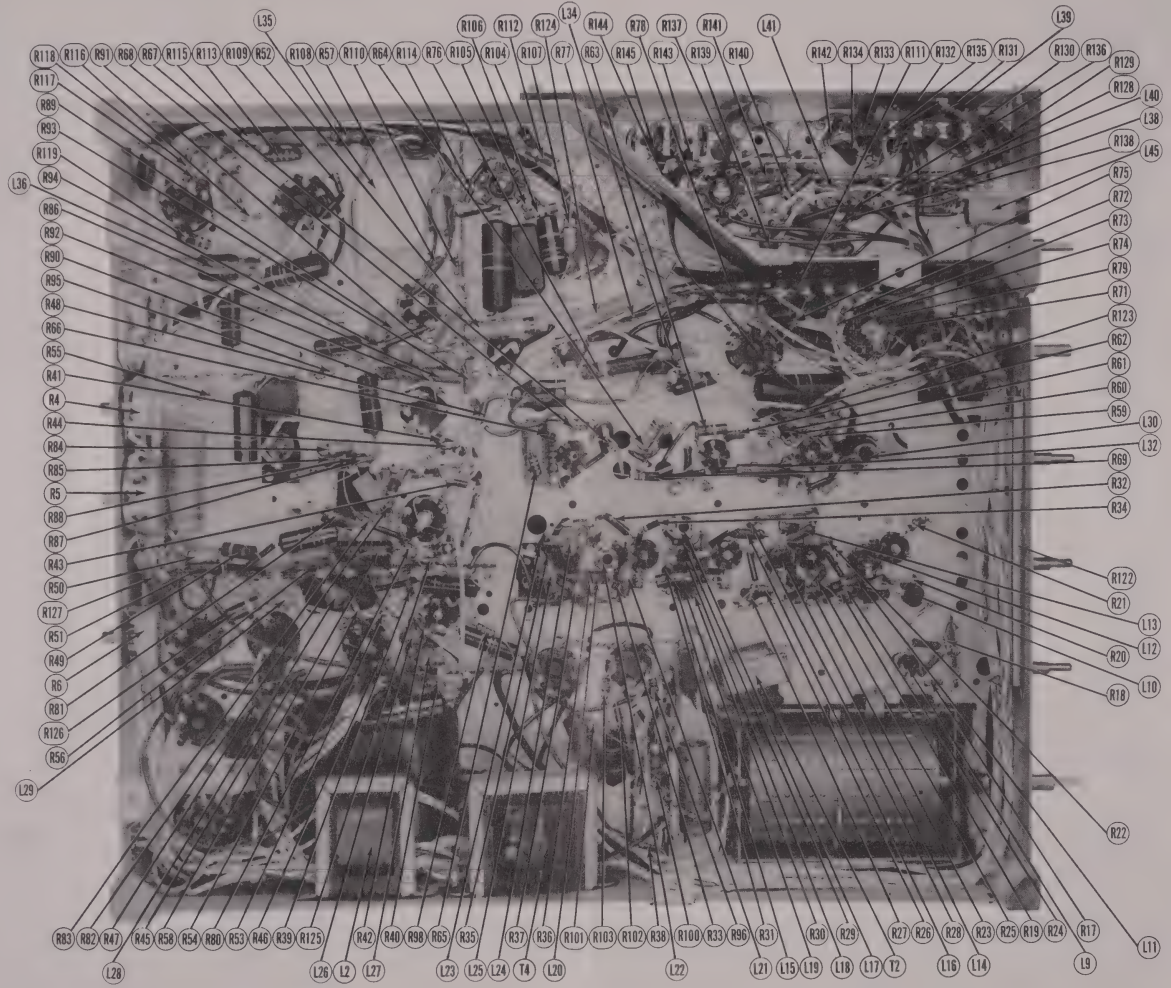
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



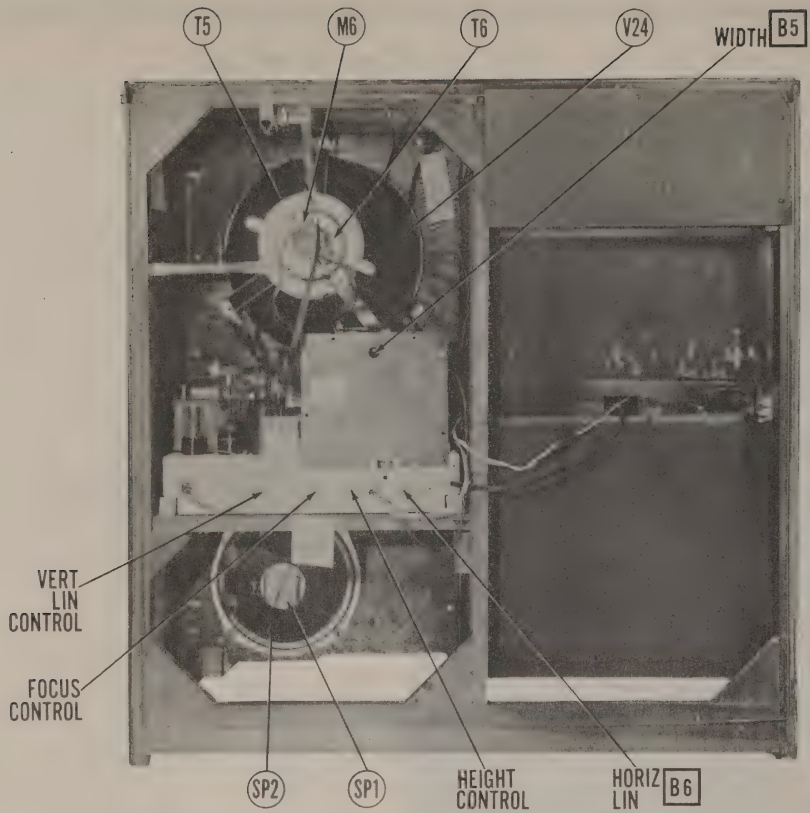
RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

HORIZONTAL OSCILLATOR ALIGNMENT

Pre-set the adjustment as follows:

Horizontal lock-in trimmer, (B3), 1/2 turn counter-clockwise from tight.

Horizontal range trimmer, (B2), 1 1/2 turns counter-clockwise from tight.

Horizontal drive trimmer, (B4), 2 turns counter-clockwise from tight.

Turn the set on and tune in a TV station, preferably a test pattern and set the contrast to normal.

Turn the horizontal hold control to fully clockwise.

Adjust the horizontal frequency slug (B1) until 8 to 10 stationary bars, sloping downward to the right, appear in the picture. If 8 to 10 bars cannot be obtained, turn B2 another full turn counter-clockwise and repeat adjustment of B1.

Turn the horizontal hold control to fully counter-clockwise and momentarily interrupt the signal by switching to another channel and back again. The picture should be out of sync.

Slowly turn the hold control clockwise and carefully note the least number of bars present just before the picture pulls into sync. If there are more than 4 1/2 bars present at the pull-in point, adjust B3 1/4 turn clockwise, if less than 3 1/2 bars are present turn B3 1/4 turn counter-clockwise. Repeat the check and adjustment of B3 until 3 1/2 to 4 1/2 bars are present at the pull-in point.

HORIZONTAL DRIVE , WIDTH AND LINEARITY ADJUSTMENT

With the drive trimmer (B4) pre-set as outlined under horizontal oscillator alignment, no further adjustment should be required. However, if vertical white lines appear in the picture, or if satisfactory horizontal linearity cannot be obtained otherwise, the drive trimmer may be adjusted slightly to correct the undesirable condition.

Adjust the width slug (B5) until the picture fills the mask horizontally.

Adjust the horizontal linearity slug (B6) until the picture is symmetrical from left to right.

TV PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		PHILCO PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	6BC5	6BC5	7BD	
V2	Converter	6J6	6J6	7BF	
V3	1st Video IF Amp.	6BC5	6BC5	7BD	
V4	2nd Video IF Amp.	6BC5	6BC5	7BD	
V5	3rd Video IF Amp.	6BC5	6BC5	7BD	
V6	4th Video IF Amp.	6BC5	6BC5	7BD	
V7	Video Detector AGC Detector	6AL5	6AL5	6BT	
V8	Video Amp.-Vert. Oscillator	12AU7	12AU7	9A	
V9	Video Output	7C5	7C5	6AA	
V10	DC Restorer-2nd Sync. Amplifier	7F7	7F7	8AC	
V11	1st Sound IF Amp.	6BA6	6BA6	7BK	
V12	2nd Sound IF Amp.	6AU6	6AU6	7BK	
V13	Ratio Detector	6AL5	6AL5	6BT	
V14	AF Amplifier	6AU6	6AU6	7BK	
V15	Audio Output	6V6G	6V6G	7AC	
V16	1st Sync. Amp. Sync. Separator	7N7	7N7	8AC	
V17	Vert. Output	6V6GT	6V6GT	7AC	
V18	Horiz. AFC-Horiz. Oscillator	7N7	7N7	8AC	
V19	Horiz. Output	6BG6G	6BG6G	5BT	
V20	Damper	6W4GT	6W4GT	4CG	
V21	H. V. Rectifier	1B3GT	1B3GT	3C	
V22	L. V. Rectifier	5Y3GT	5Y3GT	5T	
V23	L. V. Rectifier	5U4G	5U4G	5T	
V24	Picture Tube	12LP4	12LP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA PHILCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1	30	475	30-2568-19	UP6X		UPE3050		TVL-1810	Filter
C2A	40	475	30-2570-8	AF824X2A		UPT407		TVL-4822	● Filter
B	10	475							■ Decoupling
C	20	475							▲ Filter
D	10	25							Vert. Output Cathode
C3	30	250	30-2568-19	AF6G		UP3025		TVL-1516	Filter
C4A	10	450	30-2570-16	AFH22J		UPT145V4		TVL-3749	■ Filter
B	10	450		PR850/50					▲ Output Screen
C	40	50							Output Cathode
C5A	10	475	30-2570-10	AF2222X		UPT111150		TVL-4830	● Sync. Amp. Dec.
B	10	475							■ V. Amp. Dec.
C	10	475							▲ Decoupling
D	10	475							Decoupling
C6A	10	450	30-2570-16	AFH22J		UP1145		TVL-3749	■ V. Output Dec.
B	10	450							▲ V. Output Screen
C7	2	50	30-2417-7	E26E6		BBR2-50T		TVA-1301	Stabilizing Cap
C8	10	25	30-2417-1	E26A274		BR102A		TVA-1204	AGC Filter
C9	3-9								Variable Trimmer
C10	.5-3				829-3				Variable Trimmer
C11	120		60-10125237	SI120	D6-121		GP2K-120	19C29	RF Amp. Dec.
C12	1000		45-3505-52	BPD-001	DD-102		801-001	19C1	RF Amp. Fil.
C13	100		62-215001011	SI100N750	TCN-100		N750L-100	29C16	RF Coupling
C14	20		60-00205307	SI20NPO	TCZ-20		NPOK-20		Osc. Grid Cap
C15	10		62-01000900l	SI10N750	TCN-10		N750K-10	19C4	Fixed Trimmer
C16	.5-3				829-3				Variable Trimmer
C17	.5-3				829-3				Variable Trimmer
C18	100		62-215001011	SI100	D6-101		GP1K-100	19C11	Filament Bypass
C19A	1000		45-3505-52	BPD-2X001	DD-2-102		812-2X001	29C7	RF Bypass
B	1000		45-3505-52						Conv. Fil. Bypass
C20	1000		45-3505-52	BPD-001	DD-102		801-001	19C1	Conv. Plate Dec.
C21	10		62-01000900l	SI10NPO	TCZ-10		NPOK-10	19C3	Fixed Trimmer
C22	120	500	60-1025237	SI120	D6-121		GP2K-120	19C29	IF Coupling
C23	51		30-1224-62				N220K-220		Fixed Trimmer
C24	51		30-1224-62				N220K-220		Fixed Trimmer
C25	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-0015	29C8	RF Bypass
C26	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-0015	29C8	RF Bypass
C27	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-0015	29C8	AGC Filter
C28	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-0015	29C8	1st V. IF Dec.
C29	470		62-147001001	SI470	D6-471	5W5T5	GP2K-470	19C15	IF Coupling
C30	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-0015	29C8	AGC Filter
C31	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-0015	29C8	2nd V. IF Dec.
C32	10		62-01040900l	SI10	D6-100	5W5Q1	GP1K-10	19C19	2nd V. IF Dec.
C33	470		62-147001001	SI470	D6-471	5W5T5	GP2K-470	19C15	IF Coupling
C34	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-0015	29C8	AGC Filter
C35	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-0015	29C8	3rd V. IF Dec.
C36	10		62-01040900l	SI10	D6-100	5W5Q1	GP1K-10	19C19	3rd V. IF Dec.
C37	470		62-147001001	SI470	D6-471	5W5T5	GP2K-470	19C15	IF Coupling
C38	51		30-1224-2				N220K-51		Fixed Trimmer
C39	51		30-1224-2				N220K-51		Fixed Trimmer
C40	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-0015	29C8	4th V. IF Dec.
C41	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-0015	29C8	4th V. IF Cathode
C42	470		62-147001001	SI470	D6-471	5W5T5	GP2K-470	19C15	IF Coupling
C43	100		62-11009001	SI100	D6-101	5W5T1	GP1K-100	19C11	IF Coupling
C44	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-0015	29C8	AGC Filter
C45	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-0015	29C8	DAGC Dec.
C46	10		62-01040900l	SI10	D6-100	5W5Q1	GP1K-10	19C19	V. Diode Filter
C47	.047	200	45-3505-45	P288-047	DF-503	PTE4S5		2TM-S47	Video Coupling
C48	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-0015	29C8	Decoupling
C49	.22	400	45-3505-49	P488-22		GT4P25		4TM-P22	Video Coupling
C50	.047	400	45-3505-62	P488-047	DF-503	PTE4S5		4TM-S47	Video Coupling
C51	680	500	60-10685401	SI680	D6-681	1W5T7	GP2K-680	19C17	Video Coupling
C52	.47	400	45-3500-4	484-5		GT4P5		4TM-P5	Pic. Tube Cath.
C53	56		62-05640900l	SI56	D6-560		GP1K-56		Fixed Trimmer
C54	.01	100	45-3505-41	P488-01	D6-103	PTE4S1	821-01	36C1	S. IF Coupling

TV PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA PHILCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C55	1500		62-21500011	SU500	D6-152	1WSD15	GP2L-0015	29C8	RF Bypass
C56	1500		62-21500011	SU500	D6-152	1WSD15	GP2L-0015	29C8	1st. IF Dec.
C57	470		62-14700008	SU470	D6-471	5WS7T5	GP5K-470	19C15	1st. IF Cath.
C58	1500		62-21500011	SU500	D6-152	1WSD15	GP2L-0015	29C8	RF Bypass
C59	56		62-05640005	SI56	D6-560	5WS6S	GP5K-56	19C38	S. IF Coupling
C60	1500		62-21500011	SU500	D6-152	1WSD15	GP2L-0015	29C8	1st. IF Dec.
C61	100		62-11000000	SI100	D6-101	5WS7T	GP1K-100	19C11	Diode Load Cap
C62	1500		62-21500011	SU500	D6-152	1WSD15	GP2L-0015	29C8	RF Bypass
C63	.01	400	45-3505-83	P488-01	D6-103	ET4S21	82L-03	4TM-S1	De-emphasis
C64	47	300	30-1234-3	SI47	D6-470	5WS6S	GP1K-47	19C25	RF Bypass
C65	.001	400		P688-001	D6-102	PT6ED1	GP2L-001	6TM-D1	Audio Coupling *
C66	47		30-1224-2	SI47	D6-470	5WS6S	GP1K-47	19C25	Sync. Comp.
C67	.0068	400	45-3505-57	P688-0068	D6-682	PT6ED6	81L-005	6TM-D68	Tone Comp.
C68	.047	300	45-3505-62	P288-047	DF-503	PT6E4S		2TM-S47	Audio Coupling
C69	.22	400	45-3505-49	P488-33		GT4P3S		4TM-P22	AF Amp. Screen
C70	.0068	400	45-3505-57	P688-0068	D6-682	PT6ED6	81L-005	6TM-D68	Tone Comp.
C71	.047	400	45-3505-62	P488-047	DF-503	PT6E4S		4TM-S47	Audio Coupling
C72	.025	1000	45-3505-83	P1068-025		PT6EB15		MB-S15	Output Plate
C73	.047	400	45-3505-62	P488-047	DF-503	PT6E4S		4TM-S47	Sync. Coupling
C74	.0047	600	45-3505-56	P688-0047	D6-472	PT6ED5	GP2M-0047	6TM-D47	Sync. Coupling
C75	330	500	62-13300008	SI330	D6-331	5WS7T3	GP2K-330	19C14	Sync. Coupling
C76	12		30-1224-1	SI12	D6-120	5WS6Q2	GP1K-12	19C22	Sync. Sep. Grid †
C77	.047	400	45-3505-62	P488-047	DF-503	PT6E4S		4TM-S47	Sync. Coupling
C78	330	500	62-13300008	SI330	D6-331	5WS7T3	GP2K-330	19C14	Sync. Amp. Grid
C79	.0022	600	45-3505-54	P688-0022	D6-222	PT6ED2	GP3M-0022	6TM-D2	Integrator Net
C80	.0047	600	45-3505-56	P688-0047	D6-472	PT6ED5	GP3M-0047	6TM-D5	Integrator Net
C81	.0047	600	45-3505-56	P688-0047	D6-472	PT6ED5	GP2M-0047	6TM-D47	Integrator Net
C82	.015	400	45-3505-42	P488-015		PT6E15		6TM-S15	Vert. Osc. Grid
C83	.047	400	45-3505-62	P488-047		PT6E4S		4TM-S47	Vert. Discharge
C84	.1		45-3505-47	P488-1	DF-104	PT6E4P1		4TM-P1	Vert. Sweep Coupling
C85	.1	200	45-3505-47	P488-1	DF-104	PT6E4P1		2TM-P1	RF Bypass
C86	150	500	60-13515407	1468-0035	D6-151	5WS7T5	GP3K-150	1FM-315	Horiz. Sync. Coupling
C87	180	500	30-1230-30	SI180	D6-181	5RS7T2	GP2K-180	MB-32	Voltage Divider
C88	5	500	60-90505007	1468-0000G6	TCZ-4.7	5WS7V5	GP1K-5	MS-55	Horiz. Feedback
C89	.0022	600	45-3505-54	P688-0022	D6-222	PT6ED2	GP2M-0022	6TM-D22	Horiz. Sync. Coupling
C90	.022	400	45-3505-43	P488-022	DF-303	PT6E4S2		4TM-S22	AFC Filter
C91	.22	400	45-3505-49	P488-22		GT4P2S		4TM-P22	AFC Filter
C92	.047	400	45-3505-62	P488-047	DF-503	PT6E4S		4TM-S47	RF Bypass
C93	270	500	60-10275407	1469-0025	D6-271	5RS7Y25	GP2K-270	MS-325	Horiz. Osc. Grid
C94	1500	500	62-21500101	1464-0015	D6-152	1RSD15	GP2L-0015	MS-215	Horiz. Discharge
C95	390	500	60-10395407	1468-0004	D6-391	5WS7T5	GP2K-390	1FM-34	Hor. Sweep Coupling
C96	.047	600	45-3505-62	P688-047	DF-503	PT6E5S		4TM-S47	Hor. Output Screen †
C97	.047	400	45-3505-62	P488-047		PT6E4S		4TM-S47	Damper Filter
C98	.063	400	61-0174						Damper Filter
C99	.15	200	45-3505-31	P288-15		GT4P2		2TM-P15	Horiz. Sweep Coupling
C100	500	20000	30-1229-2	HV30B	TV1-502				H.V. Filter
C101	150		60-21500101	1500	D6-152	1WSD15	GP2L-0015	29C8	RF Bypass
C102	.01	400	45-3505-58	P488-01	D6-103	PT6E4S1	82L-01	4TM-S1	Line Filter
C103	.01	400	45-3505-58	P488-01	D6-103	PT6E4S1	82L-01	4TM-S1	Line Filter
C104	.022	400		P488-022	DF-303	PT6E4S2		4TM-S22	Fixed Trimmer †

* Some models use . 0033MFD in this application. Mfgrs part # 45-3505-55.
Some models use 22MMF in this application. Mfgrs. Part # 62-02200001.
† Not used in all models.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	4Meg		33-5563-21	Concentrikit B12-141 #	RTV-249	Tone Control - Front
B	2 Meg			B13-139 #		Volume Control And SW Tapped ② 1Meg - Rear
C	Shaft End			E-187 #		Attach Per Instructions in "Concentrikit"
D	Switch			76-1 #		Attach Per Instructions in "Concentrikit"
R2A	50KΩ			Concentrikit B11-123 #		Horizontal Hold Control - Front
B	1 Meg.		33-5563-20	B11-137 #	RTV-130	SBB-660 Vertical Hold Control - Rear
C	Shaft End			E-187 #		Attach Per Instructions in "Concentrikit"
R3A	2500Ω	2	33-5563-19		RTV-108	Contrast Control - Wire Wound - Front
B	100KΩ					Brightness Control - Rear
R4A	2.5Meg		33-5565-10	QU-239	AM-84-S	AN-83 Height Control
B	Shaft		Not req.	Not req.	FKS-1/4	AK-1 Attach to R4A Per Instructions
R5	200Ω	4	33-5546-13		RTV-80	SVP-984 Focus Control - Wire Wound
R6	5000Ω	2	33-5546-10	W-5000	43-5000	VK-125 Vertical Linearity Control - Wire Wound

Additional parts to be used in "Concentrikit".

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA PHILCO PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS * 10% UNLESS OTHERWISE SPECIFIED
R7	39000Ω		66-2398340	BTS-3900	Antenna Coil Shunt
R8	47kΩ	20%	66-2478340	BTS-47K	AGC Network
R9	10KΩ		66-3108340		RF Coil Shunt
R10	22000Ω	20%	66-2228340	BTS-3200	RF Amp. Decoupling
R11	4700		66-2478340	BTS-4700	Mixer Grid
R12	220KΩ	20%	66-4228340		Mixer Grid
R13	10KΩ		66-3108340		Mixer Plate Decoupling
R14	10KΩ		66-3108340		Oscillator Grid
R15	4700Ω		66-2478340	BTS-4700	Osc. Plate
R16	15KΩ		66-3158340		Conv. Plate Coil Shunt
R17	1000Ω		66-2108340		Parasitic Suppressor
R18	5600Ω	5%	66-2568340		1F Filter Network
R19	33000Ω	20%	66-2338340	BTS-3300	AGC Network
R20	15KΩ		66-3158340		1st Video IF Transformer Shunt
R21	68Ω		66-0688340		1st Video IF Amp. Cathode
R22	330Ω		66-1338340	BW-½-330	1st Video IF Amp. Decoupling - Wire Wound
R23	3300Ω	20%	66-2338340	BTS-3300	AGC Network
R24	5600Ω		66-2568340		2nd Video IF Amp. Grid
R25	120Ω		66-1128340	BTS-120	2nd Video IF Amp. Cathode
R26	3300Ω	20%	66-2338340	BTS-3300	AGC Network
R27	5600Ω		66-2568340		3rd Video IF Amp. Grid
R28	68Ω		66-0688340		3rd Video IF Amp. Cathode
R29	5600Ω		66-2568340		4th Video IF Plate Transformer Shunt
R30	5100Ω		66-2508340		IF Filter Network
R31	15KΩ		66-3158340		4th Video IF Grid Transformer Shunt
R32	100Ω		66-1108340	BTS-100	4th Video IF Amp. Cathode

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA PHILCO PART No.	IRC PART No.	IDENTIFICATION CODES
R33	5600Ω		66-2568340		4th Video IF Amp. Plate
R34	1000Ω		66-2108340	BTS-1000	4th Video IF Amp. Decoupling
R35	3300Ω		66-2338340	BTS-3300	Video Det. Diode Load
R36	120KΩ		66-4128340	BTS-120K	AGC Diode Load
R37	27KΩ		66-3278340	BTS-27K	AGC Network
R38	10KΩ		66-3108340	BTS-10K	AGC Network
R39	1Meg	20%	66-3108340	BTS-1Meg	Video Amp. Grid
R40	3900Ω		66-2398340	BTS-3900	Video Amp. Plate
R41	4700Ω		66-2474340	BTA-4700	Video Amp. Plate Decoupling
R42	15KΩ		66-3158340	BTS-15K	Video Peaking Coil Shunt
R43	1000Ω		66-2108340	BTS-1000	Voltage Divider
R44	150KΩ		66-4158340	BTS-150K	Voltage Divider
R45	10Ω	20%	66-0108340		Parasitic Suppressor
R46	330KΩ		66-4338340	BTS-330K	Video Output Grid
R47	3300Ω		66-2338340	BTS-3300	Video Output Cathode
R48	22KΩ		66-3228340	BTS-22K	Video Output Screen
R49	2400Ω	5% 2	33-1335-87		Video Output Plate
R50	560Ω	5% 1	66-1568340	BTA-560-5%	Video Output Plate
R51	10KΩ	1	66-3104340	BTA-10K	Video Output Plate
R52	1000Ω	2	66-2104340	BTB-1000	Video Output Plate Decoupling
R53	47KΩ		66-3478340	BTS-47K	Voltage Divider
R54	15KΩ		66-3158340	BTS-15K	Video Peaking Coil Shunt
R55	100Ω	20%	66-0108340	BTS-100K	Picture Tube Cathode
R56	10KΩ		66-3108340	BTS-10K	Isolation
R57	1Meg	20%	66-5108340	BTS-1Meg	DC Restorer Diode Load
R58	470KΩ		66-4478340	BTS-470K	Picture Tube Grid
R59	470KΩ		66-4478340	BTS-470K	1st Sound IF Amp. Grid
R60	68Ω		66-0688340		1st Sound IF Amp. Cathode
R61	1000Ω		66-2108340	BTS-1000	1st Sound IF Amp. Decoupling
R62	68KΩ		66-3688340		2nd Sound IF Amp. Grid
R63	10KΩ	1	66-3104340	BTA-10K	2nd Sound IF Amp. Decoupling
R64	22KΩ	1	66-3224340	BTA-22K	Voltage Divider
R65	47KΩ	1	66-3478340	BTS-47K	Ratio Det. Diode Load
R66	330Ω	1	66-1338340	BTS-330	Balancing
R67	47Ω		66-0478340		Balancing
R68	10KΩ		66-3108340	BTS-10K	De-emphasis
R69	4.7Ω		66-9478340	BW-½-4.7	Ratio Det. Diode Filament - Wire Wound
R70	82KΩ		66-3828340	BTS-82K	Tone Compensation
R71	8.2Meg		66-5828340	BTS-8.2Meg	AF Amp. Grid
R72	470KΩ		66-4478340	BTS-470K	AF Amp. Screen
R73	150KΩ		66-4158340	BTS-150K	AF Amp. Plate
R74	470KΩ		66-4478340	BTS-470K	Voltage Divider
R75	470KΩ	2	66-4478340	BTS-470K	Output Grid
R76	270Ω		66-1278340	BW-½-270	Output Cathode - Wire Wound
R77	10KΩ	1	66-3104340	BTA-10K	Output Screen
R78	820Ω	5% 1	66-1824340	BTS-820-5%	Voice Coil Shunt
R79	10Ω		66-0104340	BW-½-10	Voice Coil Shunt - Wire Wound
R80	470KΩ	20% 2	66-4478340	BTS-470K	1st Sync. Amp. Grid
R81	10KΩ	2	66-3105340	BTB-10K	1st Sync. Amp. Plate
R82	180KΩ	5% 1	66-4184340	BTA-180K-5%	Sync. Sep. Grid
R83	10KΩ	20% 1	66-3108340	BTS-10K	Sync. Sep. Grid
R84	100KΩ	1	66-4104340	BTA-100K-5%	Sync. Sep. Plate - See Note 2
R85	100KΩ	1	66-4104340	BTA-100K-5%	Sync. Sep. Plate - See Note 2
R86	5000Ω	5		1 3/4A-5000	Decoupling - Wire Wound
R87	4.7Meg	20% ½	66-5478340	BTS-4.7Meg	Voltage Divider
R88	10KΩ	20% ½	66-3108340	BTS-10K	Voltage Divider
R89	470Ω		66-2478340		Parasitic Suppressor
R90	1Meg		66-5108340	BTS-1Meg	2nd Sync. Amp. Grid
R91	3900Ω		66-2398340	BTS-3900	2nd Sync. Amp. Plate
R92	2700Ω		66-2278340	BTS-2700	2nd Sync. Amp. Plate
R93	33KΩ	1	66-3334340	BTA-33K	2nd Sync. Amp. Plate Decoupling
R94	22KΩ		66-3228340	BTS-22K	Integrator
R95	10KΩ	20%	66-3108340	BTS-10K	Integrator - See Note 3
R96	10KΩ	20%	66-3108340	BTS-10K	Integrator - See Note 3
R97	10KΩ		66-3108340	BTS-10K	Vertical Osc. Grid - See Note 1
R98	470KΩ		66-4478340	BTS-470K	Vertical Osc. Grid - See Note 4
R99	1Meg		66-5108340	BTS-1Meg	Vertical Hold Control Shunt - See Note 1
R100	470KΩ	20%	66-4478340	BTS-470K	Vertical Osc. Plate
R101	2.2Meg	20%	66-5228340	BTS-2.2Meg	Vertical Output Grid
R102	1000Ω		66-2108340	BTS-1000	Vertical Output Cathode
R103	5600Ω		66-2568340	BTS-5600	Vertical Peaking - See Note 5
R104	3.3Meg	5% 1	66-5334340	BTA-3.3Meg-5%	Voltage Divider
R105	560KΩ	5% 1	66-4568340	BTA-560K	Horizontal AFC Grid
R106	180KΩ	5% 1	66-4184340	BTA-180K-5%	Horizontal AFC Cathode
R107	100KΩ	5% 1	66-4104340	BTA-100K-5%	Horizontal AFC Cathode
R108	82KΩ		66-3828340	BTS-82K	Horizontal AFC Plate
R109	10KΩ		66-3108340	BTS-10K	Decoupling
R110	10KΩ	20%	66-3108340	BTS-10K	Horizontal AFC Filter - See Note 3
R111	42KΩ		66-3248340		Voltage Divider - Temperature Compensating
R112	82KΩ	5% 1	66-3824340	BTA-82K-5%	Horizontal Osc. Grid - See Note 6
R113	56KΩ	5% 1	66-3564340	BTA-56K-5%	Horizontal Osc. Plate - See Note 7
R114	8200Ω	1	66-2828340	BTS-8200	Horizontal Osc. Transformer Shunt - See Note 8
R115	120KΩ		66-4128340	BTS-120K	Horizontal Feedback Network
R116	680KΩ		66-4688340	BTS-680K	Horizontal Feedback Network - See Note 9
R117	10KΩ	20%	66-3108340		Parasitic Suppressor - See Note 10
R118	270KΩ		66-4278340	BTS-270K	Horizontal Output Grid
R119	4700Ω	2	66-2478340	BTS-4700	Horizontal Output Screen - See Note 8
R120	4.7Ω		66-9474360	BW-½-4.7	B. V. Rectifier Filament - Wire Wound
R121	680KΩ	20% 1	66-4684340		d.V. Filter
R122A	5000Ω	10	33-3435-25		Voltage Divider - Wire Wound
B	3750Ω	20			Decoupling - Wire Wound
R123	330Ω	½	66-1338340	BW-½-330	Decoupling - Wire Wound
R124	330Ω	5		1 3/4A-350	Decoupling - Wire Wound
R125	47KΩ	20% ½	66-3478340	BTS-47K	Voltage Divider
R126	12Ω	2	66-0123340	BW-2-12	Voltage Divider
R127	85Ω	5	33-1335-92		Focus Coil Shunt - Wire Wound

Note 1. Not used in all models.
Note 2. Some models may use a stigle 56KΩ resistor in place of R84 and R85.
Note 3. Some models may use 820KΩ resistor in this application.
Note 4. Some models may use 1 meg resistor in this application.
Note 5. Some models may use 6800Ω resistor in this application.
Note 6. Some models may use 100KΩ resistor in this application.
Note 7. Some models may use 120KΩ resistor in this application.
Note 8. Some models may use 10KΩ resistor in this application.
Note 9. Some models may use 560KΩ resistor in this application.
Note 10. Some models may use 100Ω resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA PHILCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC ② 2.1A	720VCT ③ 3A 8.6A	420VCT ③ 2A 6.3V ④ 1.2A	5V ③ 6.3V ④	32-8417			
		SEC. 4 5V ④	SEC. 5 6.3V ④	SEC. 6 6.3V ④				

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA PHILCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	162Ω	335Ω	32-8304-3				Vertical Block Trans.
T3	500Ω	8.3Ω	32-8421				
	Tap 93Ω	Tap .53Ω					
		SEC. 2 00					
T4	970Ω	11.5Ω ②	38-8425 ②				Vertical Output Trans.
T5A	14Ω		32-9622				Horizontal Deflection Coil
B	68Ω						Vertical Deflection Coil
T6	130Ω		76-2622-1				Focus Coil

② Some models use 32-8405-1 replace with 38-8425 or equivalent.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA PHILCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T7	2.45kΩ	4Ω	190Ω	.6Ω	32-8456	A-3876 ①	A-2928 ①	R0-2 ①	① New mounting hole.

SPEAKER

ITEM No.	RATINGS FIELD RES.	RATINGS V. C. IMP.	REPLACEMENT DATA PHILCO PART No.	VIKING PART No.	QUAM PART No.	NOTES
SP1	PM	4Ω	36-1610-5	10212	10A4A	
	CONE DIA.	V. C. DIA.				
SP2	9 3/8"	1"				

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 μA)	REPLACEMENT DATA PHILCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
L1	.230ADC	80Ω	5 Henries	32-8399	C-1412 ①		R-7200	① Drill new mounting hole.
L2	.100ADC	147Ω	6 Henries	32-8355-1			R-885 ①	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA PHILCO PART No.	MEISSNER PART No.	NOTES
L3	Antenna Coil	0Ω	0Ω			Refer Misc. for Part Number
L4	Fil. Choke	0Ω				
L5	RF, Mixer Grid and Osc. Coils	0Ω				Refer Misc. for Part Number
L6	Fil. Choke	0Ω				
L7	Fil. Choke	0Ω				Not used in all Models
L8A	Conv. Plate Coil	1.2Ω		45-1695		Tapped Coil - Tap at .5Ω
B	Conv. Plate Coil			45-1711		Untapped Coil
L9	Adj. Channel Sound Trap	.1Ω		32-4234-8		
L10	1st Video IF	.3Ω		32-4233-4		
L11	Fil. Choke	.3Ω		32-4112-11		
L12	2nd Video IF	.3Ω		32-4359		
L13	RF Choke	.3Ω		32-4112-11		
L14	3rd Video IF	.3Ω		32-4359		
L15	Fil. Choke	.3Ω		32-4112-11		
L16	RF Choke	.3Ω		32-4112-11		
L17	4th Video IF Plate Coil	.3Ω		32-4234-1		
L18	Sound Trap	.1Ω		32-4233-7		
L19	4th Video IF Grid Coil	.3Ω		32-4233-2		
L2C	Fil. Choke	.3Ω		32-4112-11		
L21	RF Choke	2Ω		32-4143-4		40 Microhenries
L22	5th Video IF	.3Ω		32-4334-1		
L23	RF Choke	.5Ω				
L24	Peaking	2Ω		32-4143-1		40 Microhenries
L25	Peaking	6.3Ω		32-4143-7	19-1922	25 0 Microhenries
L26	Peaking	6.3Ω		32-4143-7	19-1922	250 Microhenries
L27	Peaking	6.3Ω		32-4143-7	19-1922	350 Microhenries
L28	Peaking	5.4Ω		32-4143-5	19-1921	180 Microhenries
L29	Peaking	5.4Ω		32-4143-5	19-1921	180 Microhenries
L30	1st Sound IF	.1Ω		32-4303		
L31	2nd Sound IF	.9Ω	.8Ω	32-4236		
L32	Fil. Choke	.2Ω		32-4112-11		
L33	Ratio Det. Trans.	.2Ω	.1Ω	32-4317		
L34	RF Choke	2Ω		32-4143-1		40 Microhenries
L35	Horiz. Osc. Coil	145Ω		32-4367		Tap at 45Ω
L36	Horiz. Lin.	25Ω		32-4211-1		
L37A	Width Coil	1Ω		32-4419-3		
B	Width Coil			32-4419-2		Alternate

PHILCO MODELS 50-T1476, 50-T1477, 50-T1478, 50-T1479, 50-T1481, 50-T1482, 50-T1484

TV PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			PHILCO PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M1 M2 M3	3AG 3AG	3 Amp. .250A	45-2656-8		31303.2 312.250	357001 357001	Length #26 Copper Wire (Not used in all models).

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
M4	RF Tuner	76-5411-3	
M5	Switch	42-1915	Function Phono-AM-FM-TV
M6	Ion Trap	76-3913-4	
	Antenna Coils	32-4428-2	Channel 2
		32-4428-3	Channel 3
		32-4428-4	Channel 4
		32-4428-5	Channel 5
		32-4428-6	Channel 6
		32-4428-7	Channel 7
		32-4428-8	Channel 8
		32-4428-9	Channel 9
		32-4428-10	Channel 10
		32-4428-11	Channel 11
		32-4428-12	Channel 12
		32-4428-13	Channel 13
	RF, Mixer Grid and Osc. Coils	32-4429-2	Channel 2
		32-4429-3	Channel 3
		32-4429-4	Channel 4
		32-4429-5	Channel 5
		32-4429-6	Channel 6
		32-4429-7	Channel 7
		32-4429-8	Channel 8
		32-4429-9	Channel 9
		32-4429-10	Channel 10
		32-4429-11	Channel 11
		32-4429-12	Channel 12
		32-4429-13	Channel 13
B2, B3, B4	Trimmer	31-6477-2	3 Sections (Horiz. Range 45-370MMF) (Horiz. Lock 20-180MMF) (Horiz. Drive 45-370MMF)
	Safety Glass	54-8008	Model 50-T1477
	Safety Glass	54-7943-2	Models 50-T1482, 50-T1484
	Safety Glass	54-7943-4	Models 50-T1478, 50-T1479, 50-T1481
	Safety Glass	54-4755-1	Models 50-T1476
	Knob	56-7807-2FCP	Channel Selector(Models 50-T1476)
	Knob	56-7807FCP	Channel Selector(Model 50-T1484)
	Knob	54-4706	Channel Selector (Models 50-T1477, 50-T1478, 50-T1479, 50-T1481, 50-T1482
	Knob	54-4701	Fine Tuning
	Knob	54-4699	Volume, Vertical Hold, Brightness
	Knob	54-4707	Horizontal Hold, Contrast, Tone
	Knob	54-4720	Function Switch
	Knob	54-4750	Antenna

PHONO CARTRIDGE and NEEDLE

ITEM No.	REPLACEMENT DATA							REMARKS
	PHILCO PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M7	76-4649							

RADIO PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: PHILCO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V25	FM RF Amplifier	6AU6	6AU6	7BK	
V26	FM Converter	12AT7	12AT7	9A	
V27	AM Converter	6BE6	6BE6	7CH	
V28	IF Amp. -AM Det.	7R7	7R7	8AE	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: PHILCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C105	100		62-11000900l	SI100	D6-101	5W5T1	GP1K-100	19C11	RF Coupling
C106	100		62-11000900l	SI100	D6-101	5W5T1	GP1K-100	19C11	FM RF Amp. Dec.
C107	100		62-11000900l	SI100	D6-101	5W5T1	GP1K-100	19C11	FM RF Amp. Screen
C108	100		62-11000900l	SI100	D6-101	5W5T1	GP1K-100	19C11	FM RF Amp. Cathode
C109	100		62-11000900l	SI100	D6-101	5W5T1	GP1K-100	19C11	RF Coupling
C110	100		62-11000900l	SI100	D6-101	5W5T1	GP1K-100	19C11	Osc. Coupling
C111	51		30-1224-2	SI50	D6-500	5W5Q5	GP1K-50	19C28	Osc. Grid Cap
C112	100		62-11000900l	SI100	D6-101	5W5T1	GP1K-100	19C11	Osc. Feedback
C113	100		62-11000900l	SI100	D6-101	5W5T1	GP1K-100	19C11	RF Bypass
C114	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-0015	29C8	FM Mixer Dec.
C115	.05	200	61-0170	P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C116	51		30-1224-2	SI51	D6-500	5W5Q5	GP1K-50	19C28	Osc. Grid Cap
C117	.05	200	61-0170	P288-05	DF-503	PTE4S5		2TM-S5	Osc. Anode Bypass
C118	.05	400	61-0170	P488-05	DF-503	PTE4S5		4TM-S5	Conv. Decoupling
C119	.01	400	45-3505-41	P488-01	D6-103	PTE4S1	821-01	4TM-S1	AVC Filter
C120	.05	400	61-0170	P488-05	DF-503	PTE4S5		4TM-S5	RF Bypass
C121	1500		60-215001011	SI1500	D6-152	1W5D15	GP2L-0015	29C8	IF Amp. Dec.
C122	.006	400	45-3500-7	P488-006	D6-562	PTE6D6	811-005	6TM-D6	IF Amp. Dec.
C123	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-0015	29C8	IF Amp. Fil.
C124	10		62-01000901l	SI10	D6-100	5W5Q1	GP1K-10	19C19	IF Coupling
C125	220		62-122001001	SI220	D6-221	5W5T25	GP2K-220	19C13	FM Conv. Fil.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PHILCO PART No.	IRC PART No.	IDENTIFICATION CODES
R128	1Meg	1/2	66-5108340		FM RF Amp. Grid
R129	82Ω	1/2	66-0828340	BW-1/2-82	FM RF Amp. Cathode - See Note
R130	18KΩ	1	66-3184340		FM RF Amp. Screen
R131	1000Ω	1/2	66-2108340	BTS-1000	FM RF Amp. Decoupling
R132	2200Ω	1/2	66-2228340	BTS-2200	FM Converter Cathode
R133	1000Ω	1/2	66-2108340	BTS-1000	FM Converter Decoupling
R134	10KΩ	1/2	66-3108340		FM Osc. Grid
R135	15KΩ	1	66-3154340		FM Osc. Plate - See Note
R136	10Ω	1/2	66-0108340		Parasitic Suppressor
R137	33KΩ	1/2	66-3338340	BTS-33K	AVC Network
R138	10Ω	1/2	66-0108340		Parasitic Suppressor
R139	22KΩ	1/2	66-3228340		AM Osc. Grid
R140	47KΩ	1	66-3474340		AM Osc. Anode
R141	18KΩ	1	66-3184340	BTA-18K	IF Amp. and AM Det. Decoupling
R142	1000Ω	1/2	66-2108340	BTS-1000	IF Amp. and AM Det. Decoupling
R143	3.3Meg	1/2	66-5338340	BTS-3.3Meg	AVC Network
R144	470KΩ	1/2	66-4478340	BTS-470K	AVC Network
R145	47KΩ	1/2	66-3478340	BTS-47K	Diode Filter

Note: Not used in all models.

COILS (RF-IF)

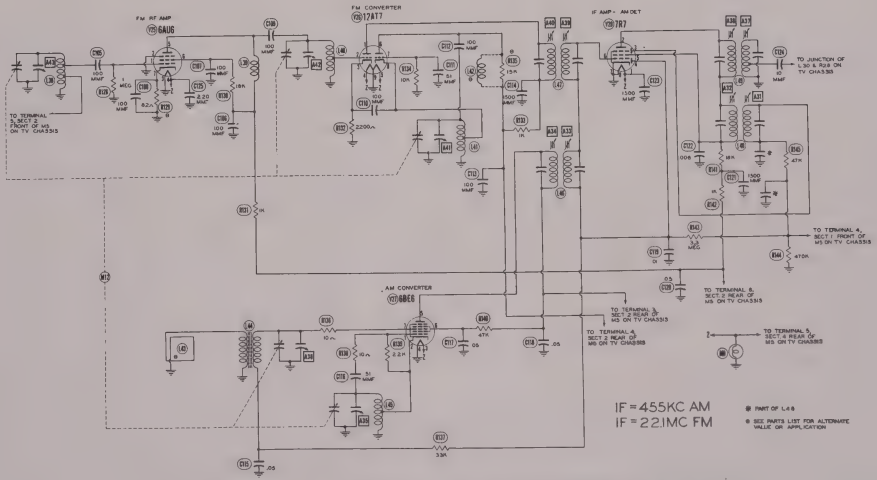
ITEM No.	USE	DC RES.: PRI.	DC RES.: SEC.	REPLACEMENT DATA: PHILCO PART No.	REPLACEMENT DATA: MEISSNER PART No.	NOTES
L38	FM Ant. Coil	0Ω		32-4382		
L39	RF Choke	.4Ω				
L40	FM RF Coil	0Ω		32-4383		
L41	FM Osc. Coil	0Ω		32-4384		
L42	RF Choke	.5Ω		32-4061-2		Some Models Use 15KΩ Resistor
L43A	Loop Ant.			32-4394-7		Model 50-T1477
B	Loop Ant.			32-4394-6		Models 50-T1478, 50-T1479, 50-T1481, 50-T1482
L44	AM Ant. Coil	.2Ω	1.4Ω	32-4408-1		
L45	AM Osc. Coil	6.5Ω		32-4153-2		Tap at .7Ω
L46	1st AM IF	13Ω	13Ω	32-4160A		
L47	1st FM IF	.1Ω	.1Ω	32-4396A		
L48	2nd AM IF	16Ω	16Ω	32-4240-3A		
L49	2nd FM IF	.4Ω	.7Ω *	32-4381A		* Tap at .2Ω

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: PHILCO PART No.	REPLACEMENT DATA	INSTALLATION NOTES
M8	Bayonet	6-8	.15	Brown	34-2039		Type # 47 (Radio Dial)
M9	Bayonet				27-6233-47		Type #422 (Phono Compartment)

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
M10	Switch	42-1914	Phono Compartment Light
M11	Phono Switch Box	42-1795-1	Model 50-T1477 (Only)
M12	Tuning Capacitor	31-2743	19-516MMF, 21-228MMF
	Pointer	56-5630-13	Ratio Tuning (Models 50-T1484, 50-T1478, 50-T1479, 50-T1481, 50-T1482)
	Pointer	56-5925	Ratio Tuning (Model 50-T1476)
	Scale	54-5078	Dial (Models 50-T1482, 50-T1484)
	Scale	54-5076	Dial (Models 50-T1478, 50-T1479, 50-T1481)
	Scale	54-5064	Dial (Model 50-T1477)
	Knob	54-4703	Tuning


FM RF AMP
V10 6AU6
FM CONVERTER
V9 12AT7
IF AMP - AM DET
V8 7R7
AM CONVERTER
V7 6BE6
TO TERMINAL 5, SECT 2 FRONT OF M3 ON TV CHASSIS
TO JUNCTION OF L30 & R28 ON TV CHASSIS
TO TERMINAL 4, SECT 1 FRONT OF M3 ON TV CHASSIS
TO TERMINAL 6, SECT 2 REAR OF M3 ON TV CHASSIS
TO TERMINAL 3, SECT 2 REAR OF M3 ON TV CHASSIS
TO TERMINAL 4, SECT 2 REAR OF M3 ON TV CHASSIS
TO TERMINAL 5, SECT 4 REAR OF M3 ON TV CHASSIS
IF = 455KC AM
IF = 22.1MC FM
* PART OF L-6 &
# SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V25	6AU6	2V 115VAC	0V	0V + 190V	0 2VAC	115VDC w/SVDC	115VDC w/SVDC 115VAC	0 1VDC		
V26	12AT7	+ 0V	0V	+ 0V	0 2VAC	0 2VAC + 0V	0V + 190V	0V		0V
V27	6BE6	+ 3.5VDC	0V	+ 0.2VAC	0V	+ 250VDC + 250VDC	6VDC	6VDC		
V28	7R7	+ 2VAC	105VDC	6VDC	115VDC	105VDC	0V	0V		0V

1 MEASURED FROM PIN 9 OF V 22

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V25	6AU6	180Ω w/SW	0Ω	0Ω	135Ω	22KΩ w/SW	22KΩ			
V26	12AT7	6.2KΩ	0Ω	3.2KΩ	0Ω	0Ω 2.7KΩ	3.2KΩ 2.7KΩ	0Ω		0Ω
V27	6BE6	22KΩ	75Ω	1Ω	0Ω	0Ω 625KΩ	0Ω 625KΩ	2.55MΩ		
V28	7R7	1Ω	22KΩ	0.55MΩ	2.55MΩ	22KΩ	0.55MΩ	1Ω		0Ω

FUNCTION SWITCH IN RADIO (AM OR FM) POSITION
F TAKEN IN FM POSITION
A TAKEN IN AM POSITION

2 TAKEN WITH VACUUM TUBE VOLTMETER

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

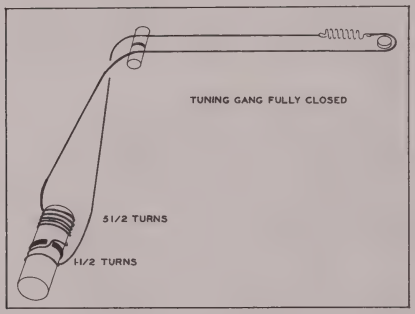
PHILCO MODELS 50-T1476, 50-T1477, 50-T1478, 50-T1479, 50-T1481, 50-T1482, 50-1484

RADIO SCHEMATIC

DISASSEMBLY INSTRUCTIONS

1. Remove ten push-on type control knobs.
2. Remove thirteen wood screws holding rear cover in place. Remove rear cover.
3. Disconnect built-in antenna.
4. Disconnect ground straps to picture tube.
5. Disconnect picture tube socket.
6. Disconnect H.V. lead from picture tube.
7. Disconnect yoke lead.
8. Disconnect phonograph input power plug.
9. Disconnect radio and phono audio input power plug.
10. Disconnect speaker leads.
11. Disconnect built-in antenna. (AM.)
12. Remove four 3/8" hex head bolts from chassis. Remove chassis.
13. Remove four 3/8" hex nuts from speaker. Remove speaker.

NOTE: FOR PICTURE TUBE REMOVAL , IT IS NECESSARY TO REMOVE CHASSIS AS OUTLINED ABOVE.



RECORDIO
MODEL 1J10 (Ch.1J1)

RECORDIO
MODEL 1J10 (Ch.1J1)

RECORDIO MODEL 1J10

TRADE NAME	Recordio, Model 1J10 (Ch. 1J1)
MANUFACTURER	Wilcox-Gay Corp., Charlotte, Michigan
TYPE SET	AC Operated Superheterodyne Receiver and Disc Recorder
TUBES(FIVE)	Types 6BE6 Converter, 6BA6 IF Amp. - MIC Pre Amp., 6AT6 Det - AVC - AF, 6AQ5 Power Output, 6X4 Rectifier
POWER SUPPLY	110-120 Volts AC — RATING .325 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning cap fully closed and set pointer parallel with base of dial.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.001mfd.	High side to stator on rear section of tuning gang. Low side to chassis	455 KC (400Ωmod)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.		Loop	1620 KC	Tuning gang fully open.	Across voice coil.	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		Loop	1400 KC	Tune for max. output.	Across voice coil.	A6	"
4.		Loop	600 KC	Tune for max. output.	Across voice coil.	A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. Repeat steps 4 and 5 until no further improvement can be made

HOWARD W. SAMS & CO., INC. • Indianapolis Indiana

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PARTS LIST AND DESCRIPTIONS

RECORDIO MODEL 1310

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: WILCOX-GAY PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	6BE6	6BE6	7CH	
V2	IF Amp.-MIC Pre Amp.	6BA6	6BA6	7BK	
V3	Det.-AVC-AF	6AT6	6AT6	7BT	
V4	Power Output	6AQ5	6AQ5	7BZ	
V5	Rectifier	6X4	6X4	5BS	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: WILCOX-GAY PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	30	350		AF663J6B		UP33145C		TVL-4742	■ Filter
B	30	350							▲ Filter
C	10	350							▲ Filter Output
D	30	25							
C2	.05	200		P288-05	DF-503	PTE455		2TM-S5	RF Coupling
C3	100		*	S1100	D6-101	5W5T1	GP1K-100	19C11	Osc. Grid Cap
C4	10000			S1100 000	D6-103	PTE4S1	821-01	36C1	Osc. Anode Bypass
C5	.05	200		P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C6	10000			S1100000	D6-103	PTE4S1	821-01	36C1	IF Amp. Decoupling
C7A	100		†	S1100	†PC-50	5W5T1	GP1K-100	19C11	Diode RF Filter
B	100			S1100		5W5T1	GP1K-100	19C11	Diode RF Filter
C8	10000			S1100000	D6-103	PTE6S1	821-01	36C1	RF Bypass
C9	10000		‡	S1100000	D6-103	PTE6S1	821-01	36C1	Audio Coupling
C10	100		§	S1100	D6-101	5W5T1	GP1K-100	19C11	AF Amp. Plate
C11	5000		♦	BPD-005	D6-502	PTE6D5	811-005	29C1	Audio Coupling
C12	10000			S1100000	D6-103	PTE6S1	821-01	36C1	Audio Coupling
C13	100	500		1468-0001	D6-101	5W5T1	GP1K-100	1FM-31	Tone Comp #
C14	1000			S11000	D6-102	1W5D1	GP2L-001	19C1	Tone Comp ¶
C15	.01	600		P688-01	D6-103	PTE6S1	821-01	6TM-S1	Line Filter

* Items C3 and R2 are combined into one unit.
† Items C7A, C7B, and R8 are combined into one unit.
‡ Items C9 and R11 are combined into one unit.
§ Items C10 and R12 are combined into one unit.
♦ Items C11 and R13 are combined into one unit.
Not used in all models.
¶ Some models use 500MMF in this application.

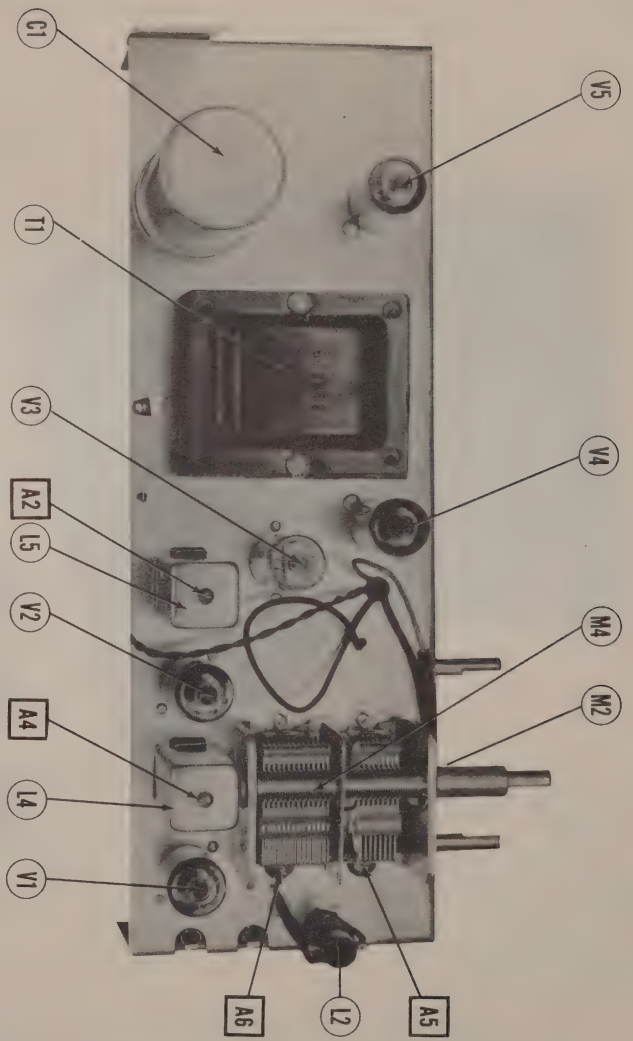
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: WILCOX-GAY PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	REPLACEMENT DATA: CENTRALAB PART No.	INSTALLATION NOTES
R1A	500KΩ	½		Q13-133	AG-60-Z	B-60-S	Volume Control
B	Shaft			Not Req	FS-3	Not Req	Attach to R1A per instructions
C	Switch			76-1	SWB	Not Req	Attach to R1A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: WILCOX-GAY PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R2	22KΩ	½	*	BTS-22K	Osc. Grid
R3	22KΩ	2		BTB-22K	Osc. Anode
R4	2.2Meg	½		BTS-2.2Meg	AVC Network
R5	2.2Meg	½		BTS-2.2Meg	AVC Network
R6	68Ω	½			IF Amp. Cathode
R7	10KΩ	2		BTB-10K	IF Amp. Decoupling
R8	47KΩ	½	†	BTS-47K	Diode Filter
R9	2.2Meg	½		BTS-2.2Meg	Tone Compensation
R10	220KΩ	½		BTS-220K	Tone Compensation
R11	10Meg	½	‡	BTS-10Meg	AF Amp. Grid
R12	220KΩ	½	§	BTS-220K	AF Amp. Plate
R13	470KΩ	½	♦	BTS-470K	Output Grid
R14	470Ω	1		BTA-470	Output Cathode
R15	2.2Meg	½		BTS-2.2Meg	Tone Compensation

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	WILCOX-GAY PART No.	IRC PART No.	
R16	1Meg	½		BTS-1Meg	Feedback
R17	1.8Ω	½		BW-½-1.8	Voice Coil Shunt
R18	1.5Ω	½		BW-½-1.5	Voice Coil Shunt
R19	6800	1		BTA-6800	Filter
R20	470Ω	2		BTB-470	Filter

* Items R2 and C3 are combined into one unit
† Items R8, C7A, and C7B are combined into one unit
‡ Items R11 and C9 are combined into one unit
§ Items R12 and C10 are combined into one unit
♦ Items R13 and C11 are combined into one unit

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	WILCOX-GAY PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ .325A	500VCT .050ADC	6.3VAC @ 1.65A		80-2194	P-6348		PH-50

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		WILCOX-GAY PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	4.7KΩ	4.1Ω	340Ω	1Ω	81-2109-2	A-3877	A-2930	RO-8	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD	V. C. IMP.	WILCOX-GAY PART No.	JENSEN PART No.	QUAM PART No.	
SP1	PM	4.1Ω		ST105 Mod. P5-X	4A07	
	CONE DIA.	V. C. DIA.				
SP2	4½	9/16				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	WILCOX-GAY PART No.	MEISSNER PART No.	
L1	Loop Ant.	1.3Ω				Encased in cabinet lid
L2	Ant. Loading Coil	3Ω				
L3	Osc. Coil	.4Ω	3.4Ω			
L4	1st IF	15Ω	16Ω			
L5	2nd IF	15Ω	16Ω			

PHONO CARTRIDGE and NEEDLE

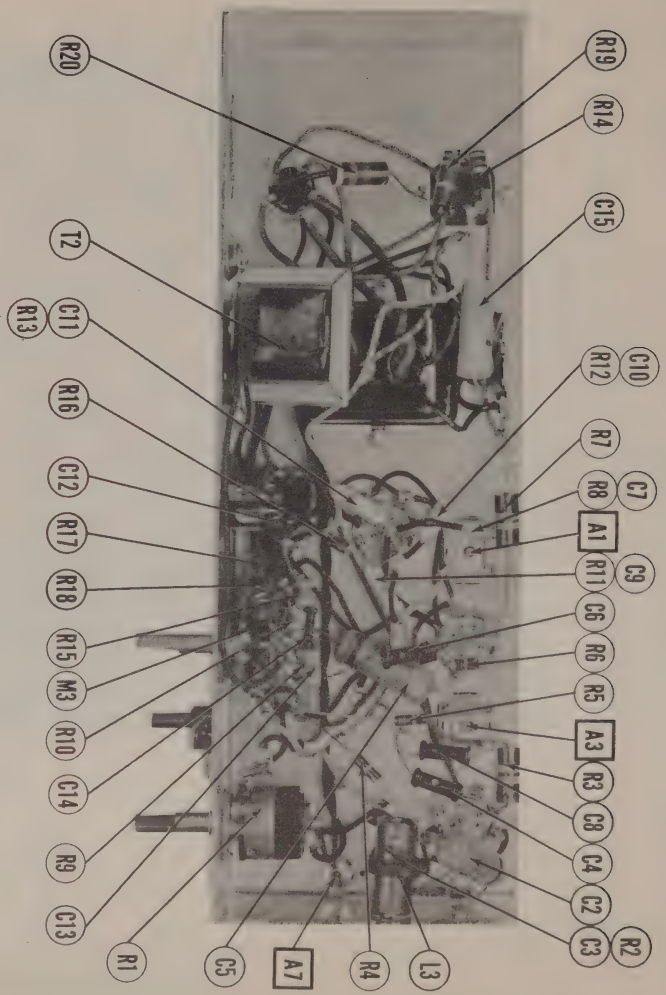
ITEM No.	REPLACEMENT DATA								REMARKS
	WILCOX-GAY PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1				W65R	A62A			

SHURE NEEDLE LISTING SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED.

MISCELLANEOUS

ITEM No.	PART NAME	WILCOX-GAY PART No.	NOTES
M2	Neon Lamp		
M3	Switch		Function
M4	2 Gang Var. Cap		(28-462MMF, 24-175MMF)

CHASSIS—BOTTOM VIEW

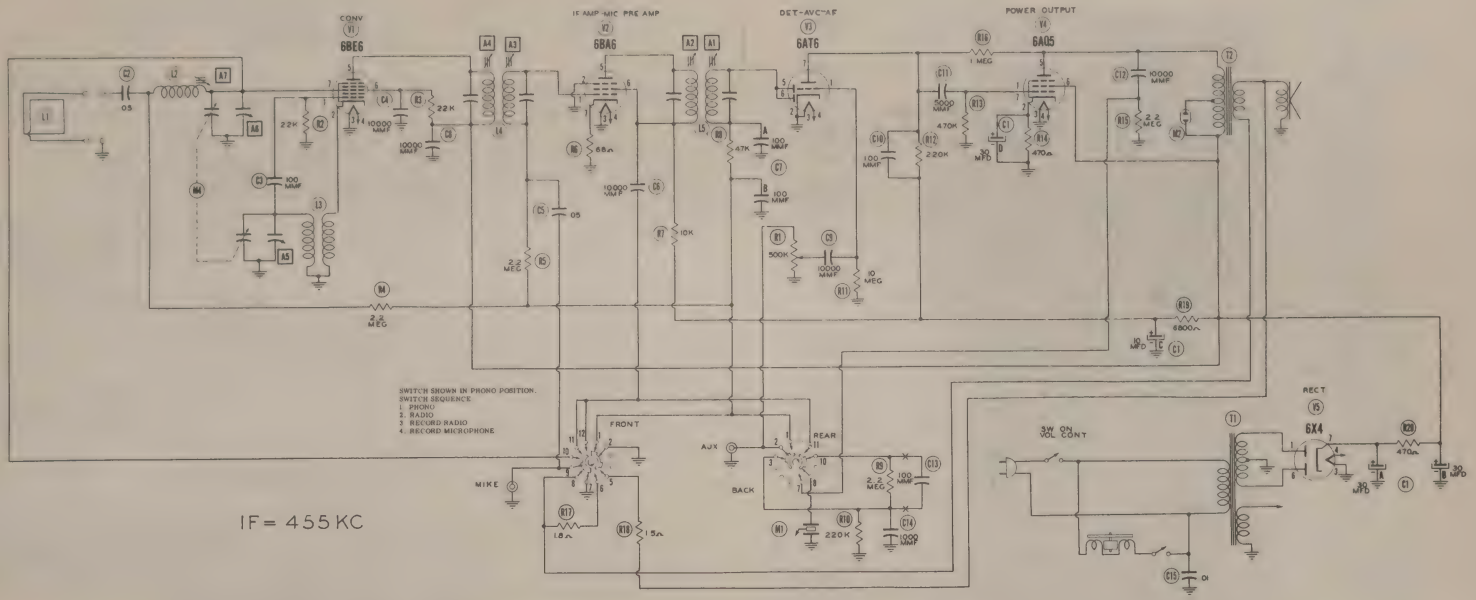


SET 128

FOLDER 12

RECORDIO MODEL 1110

RECORDIO MODEL 1110



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	6BE6	1-7.5VDC	0V	0V	6.3VAC	225VDC	85VDC	-1VDC
V 2	6BA6	-1VDC	0V	0V	6.3VAC	80VDC	80VDC	-7VDC
V 3	6AT6	-.6VDC	0V	0V	6.3VAC	-.6VDC	-.6VDC	70VDC
V 4	6AQ5	0V	15VDC	0V	6.3VAC	215VDC	225VDC	0V
V 5	6X4	260VAC	0V	0V	6.3VAC	0V	260VAC	355VDC

‡ TAKEN WITH VACUUM TUBE VOLTMETER — V & R TAKEN IN RADIO POSITION

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	6BE6	22KΩ	4Ω	0Ω	2Ω	†470Ω	†22KΩ	2.7Meg
V 2	6BA6	2.7Meg	0Ω	0Ω	2Ω	†17KΩ	†17KΩ	68Ω
V 3	6AT6	10Meg	0Ω	0Ω	2Ω	550KΩ	550KΩ	†225KΩ
V 4	6AQ5	470KΩ	470Ω	0Ω	2Ω	†810Ω	†470Ω	470KΩ
V 5	6X4	280Ω	Inf.	0Ω	2Ω	Inf.	280Ω	45KΩ

† MEASURED FROM PIN 7 OF V5

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RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

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128-12

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

SPARTON MODELS 5025, 5026, 5029, 5030, 5035, 5036, 5037, 5076, BB, 5077, BB, 5079, 5080, 5082, 5083, 5088, 5089, 5090

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Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

MODEL 5025

SPARTON MODELS 5025, 5026, 5029, 5030, 5035, 5036, 5037, 5076, BB, 5077, BB, 5079, 5080, 5082, 5083, 5088, 5089, 5090

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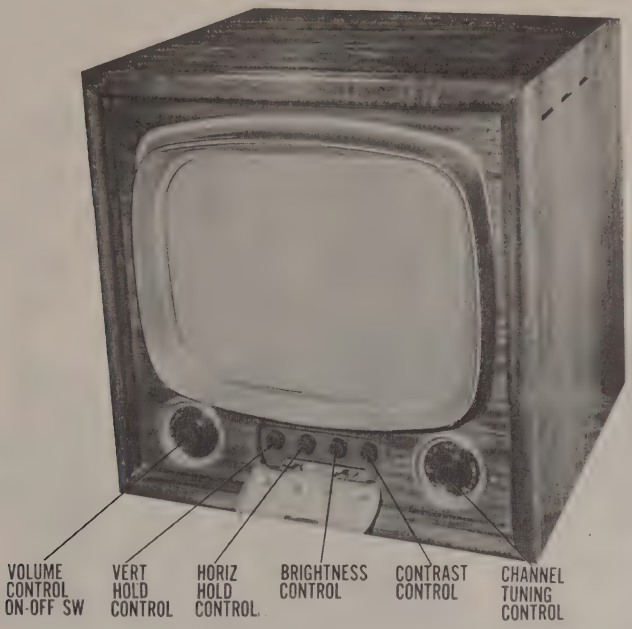
Date 3/51 Set No. 128—Folder No. 13

PHOTOFACT* Folder

*TRADE MARK

SPARTON MODELS 5025, 5026, 5029, 5030, 5035, 5036, 5037, 5076, BB, 5077, BB, 5079, 5080, 5082, 5083, 5088, 5089, 5090

SPARTON MODELS 5025, 5026, 5029, 5030, 5035, 5036, 5037, 5076, BB, 5077, BB, 5079, 5080, 5082, 5083, 5088, 5089, 5090



SPARTON MODEL 5025

TRADE NAME	Sparton	Model	TV Chassis	Radio Chassis
		5025, 5026	26SS160	
		5029, 5030	26SD160	
		5035, 5036, 5037	26SS160L	
		5076, 5077	26SS160	
		5076BB, 5077BB	26SS160B	
		5079, 5080	26SD160	
		5082, 5083, 5088		
		5089, 5090	26SD160 Or 26SD170	8W10
MANUFACTURER	Sparks-Witherington Co., Jackson, Mich.			
TUBES	Twenty Six (TV "Only" Models) Thirty Four (Combination Receivers)			
POWER SUPPLY	110-120 Volts AC - 60 Cycle			
RATING	2.3 Amp. @ 117 Volts AC (TV Operation)			
TUNING RANGES	(TV) Channels 2 thru 13 (FM) 88-108MC		(AM) 540-1620KC	

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Voltage And Resistance Measurements 8

FOR SERVICE INFORMATION ON RADIO CHASSIS 8W10 SEE PHOTOFACT FOLDER NO. 12 - SET NO. 126.
FOR SERVICE INFORMATION ON RECORD CHANGER UNIT, SEE V-M MODEL 950 PHOTOFACT FOLDER NO. 13 - SET NO. 107 OR RECORD CHANGER MANUAL CM-3.

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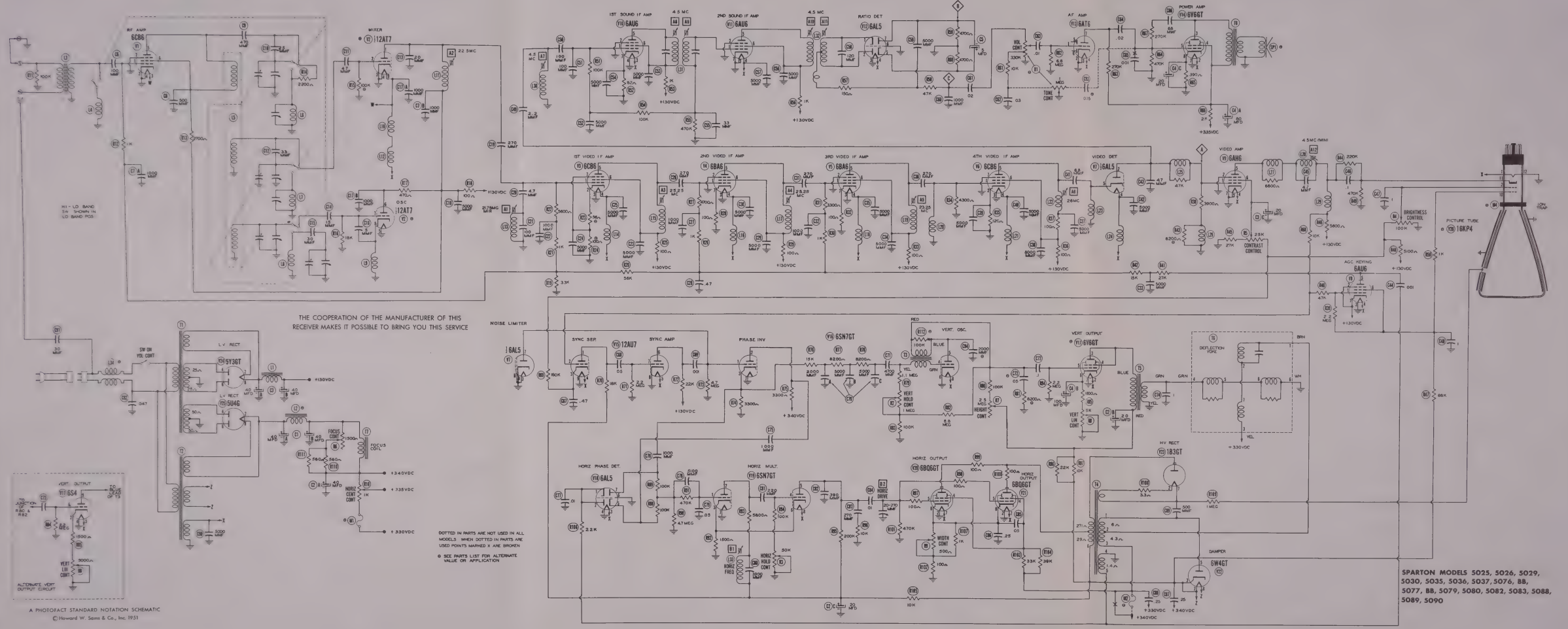

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

DOTTED IN PARTS ARE NOT USED IN ALL MODELS WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN

⊕ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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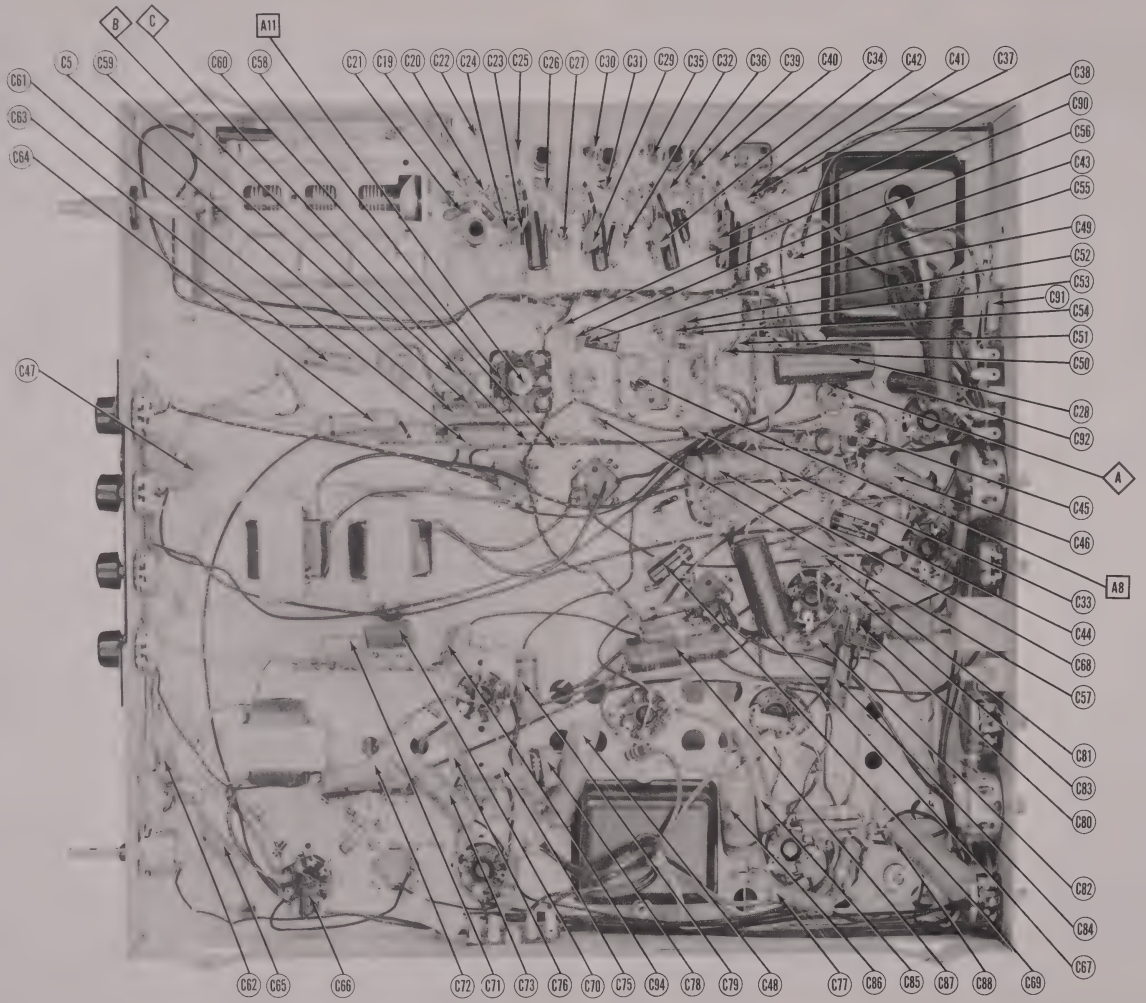
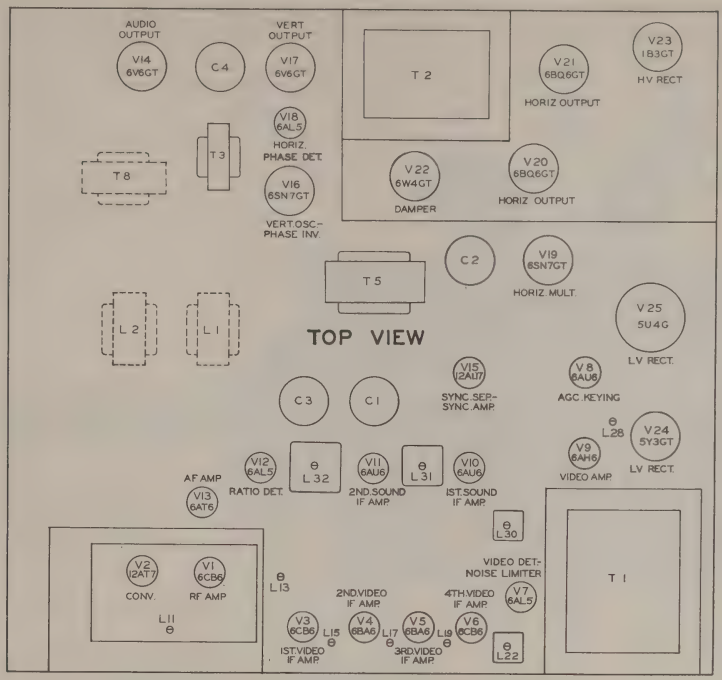
SPARTON MODELS 5025, 5026, 5029, 5030, 5035, 5036, 5037, 5076, BB, 5077, BB, 5079, 5080, 5082, 5083, 5088, 5089, 5090

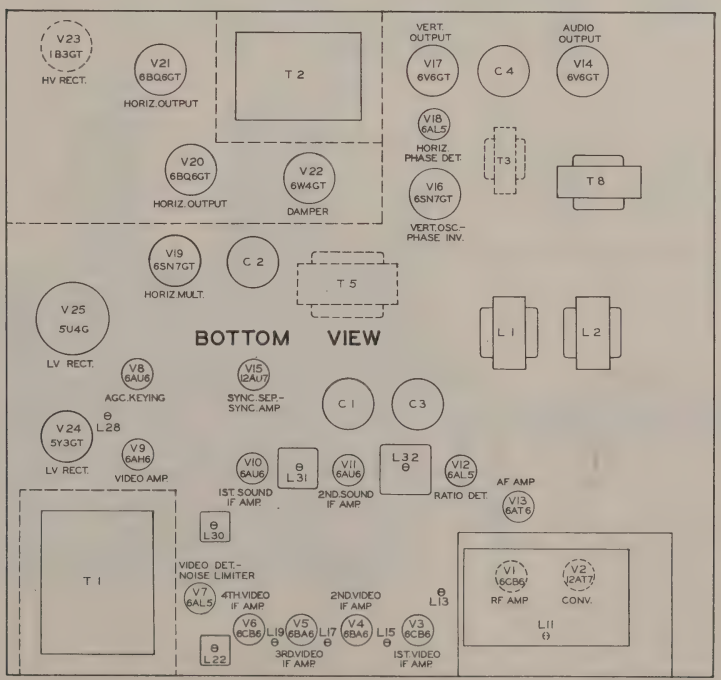
SPARTON MODELS 5025, 5026, 5029, 5030, 5035, 5036, 5037, 5076, BB, 5077, BB, 5079, 5080, 5082, 5083, 5088, 5089, 5090

CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION





TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To eliminate the high voltage shock hazard, remove the horizontal oscillator tube (V19) from its socket.

VIDEO IF ALIGNMENT

Remove the converter tube (V2) from its socket, and replace with a 12AT7 with pin 6 removed to prevent erroneous indications.
Connect the negative lead of a 4 1/2 volt battery to the junction of R30 and R42. Connect the positive lead to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over dummy converter tube. Low side to chassis.	21.75MC (Unmod.)	Any	DC probe to Point (A). Common to chassis.	A1	Adjust for MINIMUM deflection.
2.	"	"	22.5MC (Unmod.)	"	"	A2	Adjust for maximum deflection.
3.	"	"	25.25MC (Unmod.)	"	"	A3	"
4.	"	"	24.25MC (Unmod.)	"	"	A4	"
5.	"	"	23.25MC (Unmod.)	"	"	A5	"
6.	"	"	26MC (Unmod.)	"	"	A6	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
Connect a 47KΩ resistor in series with the vertical amp. input lead of an oscilloscope and a 50MMF capacitor across the vertical input terminals.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Direct	High side to ungrounded tube shield floating over dummy converter tube. Low side to chassis.	25MC (10MC SWP)	22.7MC 25.5MC 26.25MC	Any	Vert. amp. thru 47KΩ to Point (A). Low side to chassis.		Check for response curve similar to figure 1. The 26.25MC marker should beat 50% response. If necessary slighlty retouch A2 thru A6 for proper response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
8.	Direct	High side to Point A. Low side to chassis.	4.5MC (Unmod.)	Any	DC probe to Point (B). Common to chassis.	A7, A8, A9, A10	Adjust for maximum deflection
9.	"	"	"	"	DC probe to Point (C). Common to chassis.	A 11	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Direct	High side to Point A. Low side to chassis.	4.5MC (450KC SWP)	4.5MC	Any	Vert. amp. to Point (B). Low side to chassis.	A7, A8, A9, A10	Disconnect stabilizing capacitor (C5). Adjust for maximum amplitude and symmetry as per figure 2.
9.	"	"	"	"	"	Vert. amp. to Point (C). Low side to chassis.	A 11	Reconnect capacitor C5. Adjust A-11 to place 4.5MC at center of crossover lines as per figure 3. SLIGHTLY retouch A 10 for maximum amplitude and straightness of cross over lines

4.5MC TRAP ADJUSTMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
10.	Direct	High side to Point A. Low side to chassis.	4.5MC (Unmod.)	Any	RF probe to pin 11 picture tube (V26). Common to chassis.	A12	Adjust for MINIMUM deflection.

THE RF TUNER PORTION OF THIS RECEIVER HAS BEEN PROPERLY ALIGNED AT THE FACTORY.

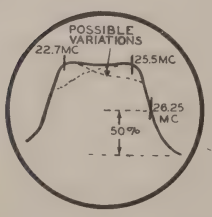


FIG. 1

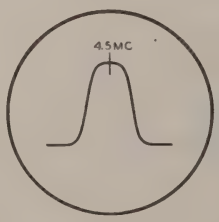


FIG. 2

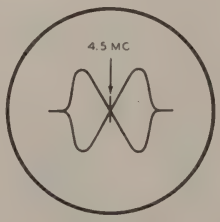
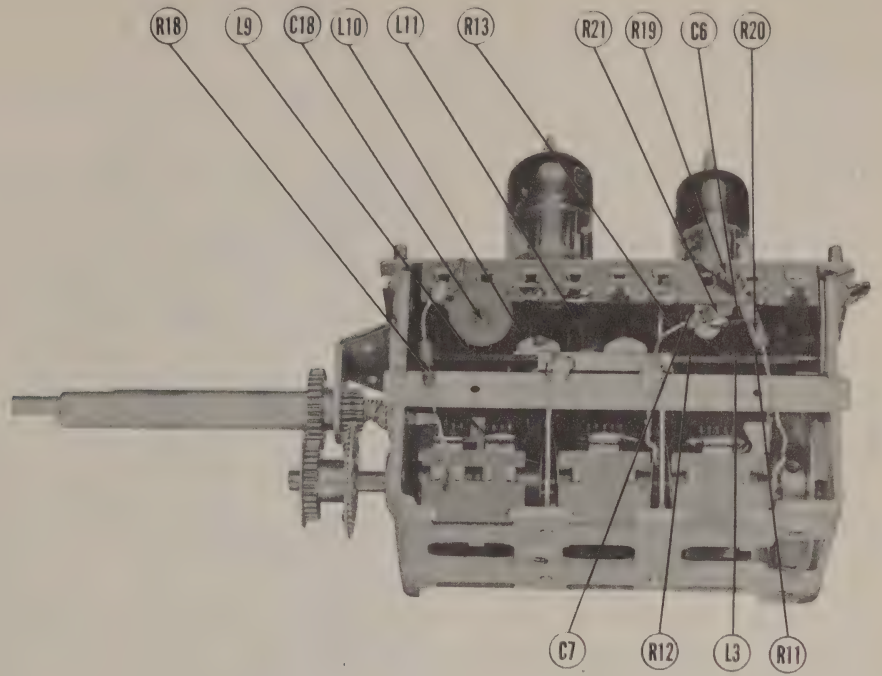
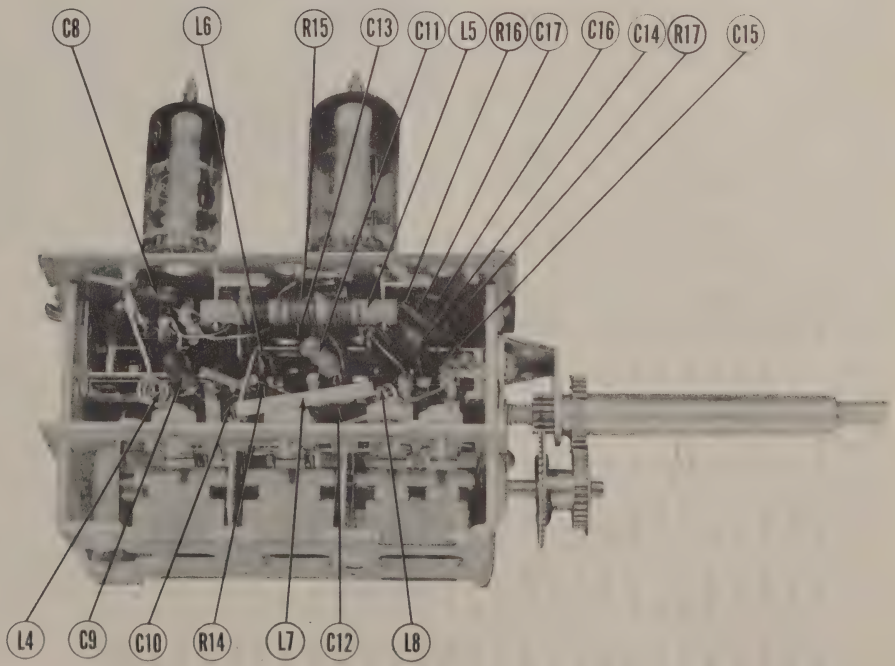


FIG. 3



RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	-.1VDC	0V	6.3VAC	0V	90VDC	90VDC	0V		
V 2	12AT7	120VDC	-.4VDC	0V	0V	0V	120VDC	§-.2VDC	0V	6.3VAC
V 3	6CB6	-.1VDC	2VDC	0V	6.3VAC	130VDC	130VDC	1.2VDC		
V 4	6BA6	-.1VDC	0V	0V	6.3VAC	130VDC	130VDC	2VDC		
V 5	6BA6	-.1VDC	0V	0V	6.3VAC	130VDC	130VDC	2VDC		
V 6	6CB6	0V	1.1VDC	0V	6.3VAC	128VDC	130VDC	0V		
V 7	6AL5	0V	-.1VDC	0V	6.3VAC	0V	0V	-20VDC		
V 8	6AU6	110VDC	130VDC	0V	6.3VAC	-.2VDC	475VDC	130VDC		
V 9	6AH6	-.1VDC	0V	0V	6.3VAC	115VDC 65VDC	100VDC 55VDC	0V		
V 10	6AU6	-.3VDC	0V	6.3VAC	0V	115VDC	115VDC	.7VDC		
V 11	6AU6	-.6VDC	0V	0V	6.3VAC	115VDC	115VDC	0V		
V 12	6AL5	-.1VDC	.1VDC	0V	6.3VAC	.2VDC	0V	-.2VDC		
V 13	6AT6	-.5VDC	0V	0V	6.3VAC	0V	0V	65VDC		
V 14	6V6GT	0V	6.3VAC	240VDC	250VDC	0V	0V	0V	15VDC	
V 15	12AU7	380VDC	70VDC	100VDC	6.3VAC	6.3VAC	55VDC	-.4VDC	0V	0V
V 16	6SN7GT	-20VDC	340VDC	6.8VDC	-.20VDC -6VDC	380VDC 75VDC	0V	0V	6.3VAC	
V 17	6V6GT	0V	6.3VAC	440VDC 340VDC	440VDC 340VDC	0V	0V	0V	50VDC 30VDC	
V 18	6AL5	.1VDC	.1VDC	6.3VAC	0V	2VDC	0V	-2VDC		
V 19	6SN7GT	-.3VDC	350VDC	15VDC	-4.2VDC -6VDC	135VDC	15VDC	0V	6.3VAC	
V 20	6BQ6GT	0V	0V	0V	210VDC 115VDC	-4.8VDC 0V	-4.8VDC 0V	6.3VAC	40VDC 15VDC	TOP CAP *
V 21	6BQ6GT	0V	0V	0V	210VDC 115VDC	-4.8VDC 0V	6.3VAC	6.3VAC	40VDC 15VDC	TOP CAP *
V 22	6W4GT	0V	0V	485VDC	475VDC	340VDC	0V	485VDC	485VDC	
V 23	1B3GT	* DO NOT MEASURE								
V 24	5Y3GT	0V	145VDC	0V	190VAC	0V	190VAC	0V	145VDC	
V 25	5U4G	0V	400VDC	0V	390VAC	75VDC	390VAC	350VDC	400VDC	
V 26	16KP4	6.3VAC	110VDC 0V	PIN 10 475VDC	PIN 11 70VDC	PIN 12 0V				

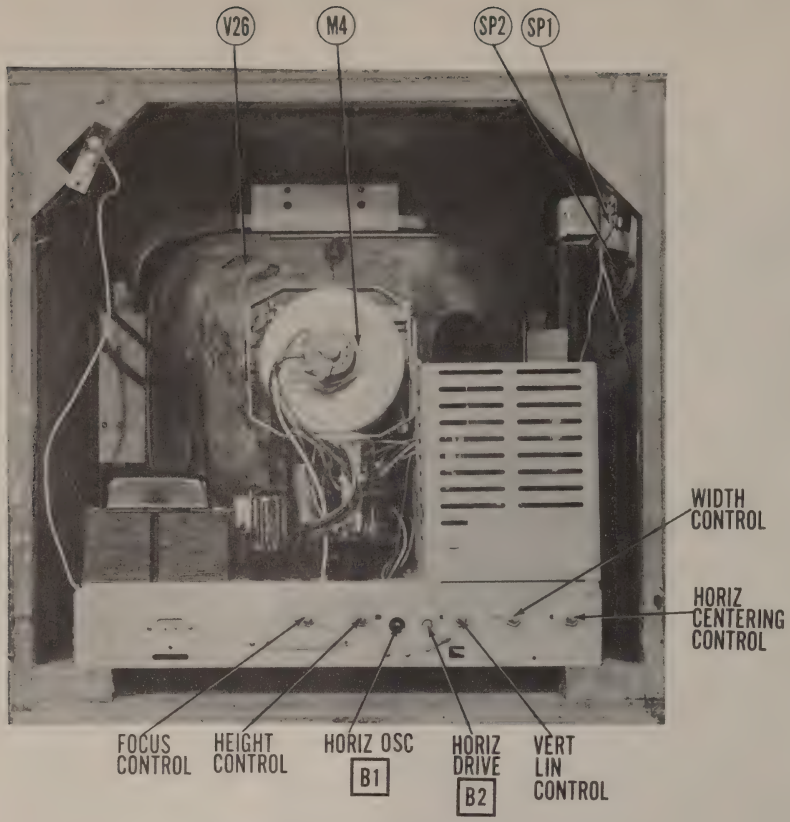
FOCUS CONTROL COUNTER CLOCKWISE
HORIZONTAL CENTERING CONTROL COUNTER CLOCKWISE
§ TAKEN WITH VACUUM TUBE VOLTMETER
* DO NOT MEASURE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	34KΩ	0Ω	.1Ω	0Ω	#2.9KΩ	#2.9KΩ	0Ω		
V 2	12AT7	#210Ω	100KΩ	0Ω	0Ω	0Ω	#680Ω	18KΩ	.2Ω	.1Ω
V 3	6CB6	40KΩ	155Ω	0Ω	.1Ω	#210Ω	#210Ω	100Ω		
V 4	6BA6	95KΩ	0Ω	0Ω	.1Ω	#210Ω	#210Ω	100Ω		
V 5	6BA6	95KΩ	0Ω	0Ω	.1Ω	#210Ω	#210Ω	100Ω		
V 6	6CB6	.3Ω	120Ω	0Ω	.1Ω	#310Ω	#210Ω	0Ω		
V 7	6AL5	0Ω	3.9KΩ	0Ω	.1Ω	3Ω	0Ω	4.7Meg		
V 8	6AU6	#60KΩ	#110Ω	0Ω	.1Ω	130KΩ	▲68KΩ	#110Ω		
V 9	6AH6	3.9KΩ	0Ω	0Ω	.1Ω	#5.7KΩ	#5KΩ #20KΩ	0Ω		
V 10	6AU6	670KΩ	0Ω	.1Ω	0Ω	#1.1KΩ	#1.1KΩ	82Ω		
V 11	6AU6	470KΩ	0Ω	0Ω	.1Ω	#1.1KΩ	#1.1KΩ	0Ω		
V 12	6AL5	Inf.	Inf.	0Ω	.1Ω	4.7KΩ	0Ω	4.7KΩ		
V 13	6AT6	6.8Meg	0Ω	0Ω	.1Ω	Inf.	Inf.	†270KΩ		
V 14	6V6GT	Inf.	.1Ω	†2.6KΩ	†2.3KΩ	470KΩ	740KΩ	0Ω	390Ω	
V 15	12AU7	▲28KΩ	#16KΩ	#180KΩ	.1Ω	.1Ω	#22KΩ	2.2Meg	0Ω	0Ω
V 16	6SN7GT	4.7Meg	†3.6KΩ	3.3KΩ	1.2Meg 2.2Meg	▲105KΩ ▲2Meg	0Ω	0Ω	.1Ω	
V 17	6V6GT	Inf.	.1Ω	▲7.7KΩ	▲7.7KΩ	2.2Meg	Inf.	0Ω	6.6KΩ 1.6KΩ	
V 18	6AL5	22KΩ	22KΩ	.1Ω	0Ω	4.8Meg	0Ω	4.8Meg		
V 19	6SN7GT	5.2Meg	▲16KΩ	1.5KΩ	100KΩ 150KΩ	▲210KΩ	1.5KΩ	0Ω	.1Ω	
V 20	6BQ6GT	Inf.	0Ω	Inf.	†18KΩ	470KΩ	470KΩ	.1Ω	430Ω 100Ω	TOP CAP ▲130Ω
V 21	6BQ6GT	Inf.	0Ω	Inf.	†18KΩ	470KΩ	.1Ω	.1Ω	430Ω 100Ω	TOP CAP ▲130Ω
V 22	6W4GT	Inf.	Inf.	68KΩ	180KΩ	†300Ω	Inf.	▲0Ω	▲.2Ω	
V 23	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP ▲ 300Ω
V 24	5Y3GT	Inf.	35KΩ	Inf.	35Ω	Inf.	35Ω	Inf.	35KΩ	
V 25	5U4G	Inf.	100KΩ	1.4Ω	50Ω	200KΩ	50Ω	†300Ω	100KΩ	
V 26	16KP4	1Ω	30KΩ 0Ω	PIN 10 ▲69KΩ	PIN 11 200KΩ	PIN 12 0Ω				

FOCUS CONTROL COUNTER CLOCKWISE
HORIZONTAL CENTERING CONTROL COUNTER CLOCKWISE
MEASURED FROM PIN 8 OF V 24
† MEASURED FROM PIN 8 OF V25
▲ MEASURED FROM PIN 3 OF V22

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Turn the horizontal hold control to the mid-position of its range.

Adjust the horizontal frequency slug (B1) until picture synchronizes horizontally.

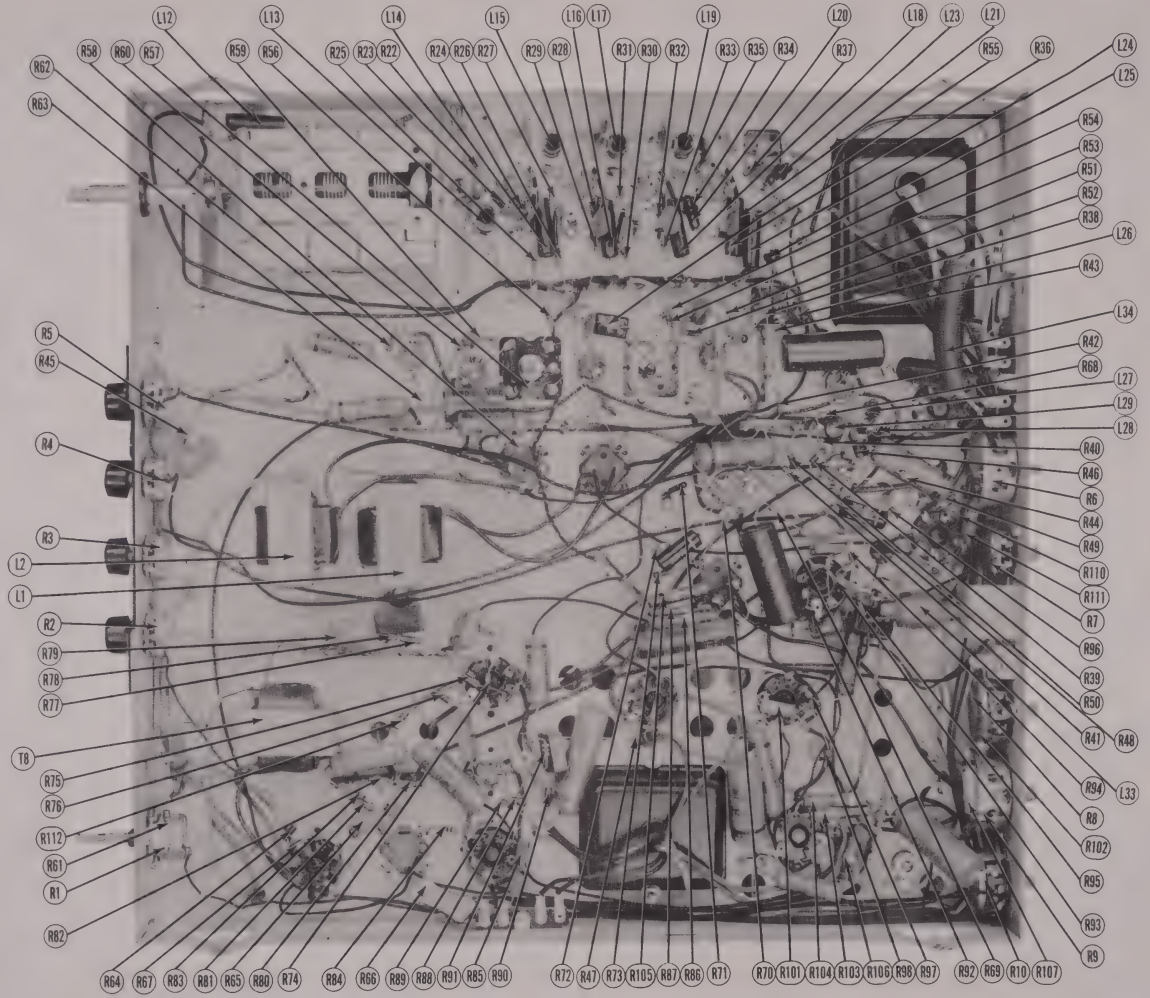
Adjust the horizontal drive trimmer (B2) for best compromise between brightness and horizontal linearity.

Adjust the width control until the picture fills the mask horizontally.

DISASSEMBLY INSTRUCTIONS

1. Remove four push-on type control knobs.
2. Remove six wood screws holding rear cover in place. Remove rear cover.
3. Disconnect built-in antenna.
4. Remove antenna terminal strip.
5. Disconnect speaker leads.
6. Remove four 3/8" hex head bolts from chassis. Remove chassis.
7. Remove two 1/4" hex nuts from speaker.

NOTE: FOR PICTURE TUBE REMOVAL , IT IS NECESSARY TO REMOVE THE CHASSIS AS OUTLINED ABOVE.



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SPARTON PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amplifier	6CB6	6CB6	6CK	
V2A	Converter	12AT7	12AT7	9A	
B	Converter	12AT7	12AV7	9A	
V3	1st Video IF Amp.	6CB6	6CB6	6CK	
V4	2nd Video IF Amp.	6BA6	6BA6	7BK	
V5	3rd Video IF Amp.	6BA6	6BA6	7BK	
V6	4th Video IF Amp.	6CB6	6CB6	6CK	
V7	Video Det. Noise Limiter	6AL5	6AL5	6BT	
V8	AGC Keying	6AU6	6AU6	7BK	
V9	Video Amplifier	6AH6	6AH6	7BK	
V10	1st Sound IF Amp.	6AU6	6AU6	7BK	
V11	2nd Sound IF Amp.	6AU6	6AU6	7BK	
V12	Ratio Det. -	6AL5	6AL5	6BT	
V13	AF Amplifier	6AT6	6AT6	7BT	
V14	Power Amplifier	6V6GT	6V6GT	7AC	
V15	Sync. Sep.- Sync. Amplifier	12AU7	12AU7	9A	
V16	Vert. Osc. -Phase Inverter	6SN7GT	6SN7GT	8BD	
V17A	Vertical Output	6V6GT	6V6GT	7AC	
B	Vertical Output	6S4	6S4	7AC	
V18	Horiz. Phase Det.	6AL5	6AL5	6BT	
V19	Horiz. Mult.	6SN7GT	6SN7GT	8BD	
V20	Horiz. Output	6BQ6GT	6BQ6GT	6AM	
V21	Horiz. Output	6BQ6GT	6BQ6GT	6AM	
V22	Damper	6W4GT	6W4GT	4CG	
V23	R. F. Rectifier	1B3GT	1B3GT	3C	
V24	L. V. Rectifier	5Y3GT	5Y3GT	5T	
V25	L.V. Rectifier	5U4G	5U4G	5T	
V26A	Picture Tube	17AP4	17AP4	12D	
B	Picture Tube	17AP4A	17AP4A	12D	
C	Picture Tube	16KP4	16KP4	12D	
D	Picture Tube	16RP4	16RP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SPARTON PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	475	PA4307-13	AF88K			UP4450		▲ Filter
B	40	475						TVL-2830	▲ Filter
C2A	40	475	PA4307-22	AFH8422J			UPT42345C		▲ Filter
B	20	450						TVL-4840	■ Decoupling
C	20	450							■ Decoupling
C3A	40	250	PA4307-21	AFH8422			UPT4421J30		▲ Filter
B	40	250						TVL-4579	■ Filter
C	20	200							▲ V. Amp. Screen
C4A	80	450	PA4307-23	AFH6J204B			UPT404	TVL-2710	▲ Filter
B	100	50					BR205A	TVA-1310	▲ Filter
C	20	50							▲ Output Cathode
C5	5	50	PA4308-2	PR5150/4			BR550	TVA-1303	Stabilizing Cap.
C6	100		S1500	D6-501		GP2K-500	19C32		RF Coupling Dec.
C7A	1000		BPD-2X001	DD-2-102		GP2K-470	19C15	812-2X001	RF Coupling
B	1000					GP2K-102	19C16	29C7	AGC Filter
C8	500		S1500	D6-501		GP2K-500	19C32		RF Amp. Dec.
C9	470		S1470	D6-471		GP2K-470	19C15		RF Coupling
C10	25		S125NPO	TCZ-25		NPOK-25	29C18		Fixed Padder
C11	47		S147	D6-470		GP1K-47	19C25		RF Coupling
C12	33			TCN-33		N750K-33	19C8		Fixed Padder
C13	20		S120NPO	TCZ-20		NPOK-20			Fixed Trimmer
C14	15		S15N750	TCN-15		N750K-15	19C6		Osc. Grid Cap
C15	30			TCN-30		N750K-30			Fixed Padder
C16	5		S5N750	TCZ-5		N750K-5			Osc. Feedback
C17A	1000		BPD-2X001	DD-2X001			812-2X001	29C7	Osc. Filament
B	1000								Osc. Plate
C18	5000		PA4324-1	BPD-005	DD-502	1D5D5	811-005	29C1	RF Bypass
C19	270		HK36M-271	S1270	D6-271	5W5T25	GP2K-270	19C31	IF Coupling
C20	4.7		HA332-11	S14.7NPO	TCZ-4.7	5R5V5	NPOK-4.7		IF Coupling
C21	100		PA4332-3	S110NPO	TCZ-100		NPOM-100	36C10	Fixed Trimmer
C22	1000		HK36M-102	S1000	D6-102	1W5D1	GP2L-001	19C1	AGC Filter
C23	5000		PA4324-1	BPD-005	DD-502	1D5D5	811-005	29C1	1st V. IF Dec.
C24	5000		PA4324-1	BPD-005	DD-502	1D5D5	811-005	29C1	1st V. IF Cath.
C25	5000		PA4324-1	BPD-005	DD-502	1D5D5	811-005	29C1	1st V. IF Fil.
C26	270		HK36M-271	S1270	D6-271	5W5T25	GP2K-270	19C31	IF Coupling
C27	1000		HK36M-102	S1000	D6-102	1W5D1	GP2L-001	19C1	AGC Filter
C28	47	200	PC42DK-474	P288-47		GTP5			AGC Filter
C29	5000		PA4324-1	BPD-005	DD-502	1D5D5	811-005	29C1	2nd V. IF Dec.
C30	5000		PA4324-1	BPD-005	DD-502	1D5D5	811-005	29C1	2nd V. IF Fil.
C31	270		HK36M-271	S1270	D6-271	5W5T25	GP2K-270	19C31	IF Coupling
C32	1000		HK36M-102	S1000	D6-102	1W5D1	GP2L-001	19C1	AGC Filter
C33	5000		PA4324-1	BPD-005	DD-502	1D5D5	811-005	29C1	AGC Filter
C34	5000		PA4324-1	BPD-005	DD-502	1D5D5	811-005	29C1	3rd V. IF Dec.
C35	5000		PA4324-1	BPD-005	DD-502	1D5D5	811-005	29C1	3rd V. IF Fil.
C36	270		HK36M-271	S1270	D6-271	5W5T25	GP2K-270	19C31	IF Coupling
C37	5000		PA4324-1	BPD-005	DD-502	1D5D5	811-005	29C1	4th V. IF Plate Dec.
C38	5000		PA4324-1	BPD-005	DD-502	1D5D5	811-005	29C1	4th V. IF Dec.
C39	5000		PA4324-1	BPD-005	DD-502	1D5D5	811-005	29C1	4th V. IF Cath.
C40	5000		PA4324-1	BPD-005	DD-502	1D5D5	811-005	29C1	4th V. IF Fil.
C41	6.8		PA4328-13	8N750	TCZ-6.8	5W5Q	NPOK-6.8	19C3	IF Coupling
C42	5000		PA4324-1	BPD-005	DD-502	1D5D5	811-005	29C1	V. Det. - Limiter Fil.
C43	4.7		PA4328-11	S14.7NPO	TCZ-4.7	5R5V5	NPOK-4.7	M3S-55	V. Diode Filter
C44	.008	600	PC40GM-102	P688-001	D6-102		GP2L-001	5TM-D1	Horiz. Sweep Coupling
C45	47		CC30A-470F	S147NPO	TCZ-47		NPOM-47	29C14	Fixed Trimmer
C46	.1	400	PC40GL-104	P488-1		DF-104	PTE4P1	4TM-P1	Video Coupling
C47	.1	200	PC40GK-104	P288-1		DF-104	PTE4P1	2TM-P1	Picture Tube Grid
C48	.1	100	PC40GM-104	P688-1		DF-104	PTE6P1	6TM-P1	Decoupling
C49	2.2		PA4328-1			TCZ-2.2			S. IF Coupling
C50	100		PA4332-3	S110NPO	TCZ-100	5R5T1	NPOM-100	36C10	S. IF Coupling
C51	100		PA4332-3	S110NPO	TCZ-100	5R5T1	NPOM-100	36C10	Voltage Divider
C52	5000		PA4324-1	BPD-005	DD-502	1D5D5	811-005	29C1	AVC Filter
C53	5000		PA4324-1	BPD-005	DD-502	1D5D5	811-005	29C1	1st S. IF Dec.
C54	5000		PA4324-1	BPD-005	DD-502	1D5D5	811-005	29C1	1st S. IF Cath
C55	33	500	HC301E-330	B33	D6-331	1W5Q3	GP2K-33	19C24	2nd S. IF Grid Filter
C56	5000		PA4324-1	BPD-005	DD-502	1D5D5	811-005	29C1	2nd S. IF Dec.

PARTS LIST AND DESCRIPTIONS

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SPARTON PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C57	5000		PA4334-1	BPD-005	DD-502	1D5D5	811-005	29C1	2nd S. IF Fil.
C58	120	500	MC62F-121		TCZ-120				Fixed Trimmer
C59	5000		PA4334-1	BPD-005	DD-502	1D5D5	811-005	29C1	Diode Load Cap
C60	1000			S1000	D6-102	1W5D1	GP2L-001	19C1	De-emphasis
C61	.02	400	PC40HL-203	P488-02	DF-203	PTE4S2		4TM-S2	Audio Coupling
C62	.03	200	PC40GK-303	P688-03		PTE6S3		6TM-S3	Tone Comp.
C63	.01	400		P488-01	D6-103	PTE4S1	821-01	4TM-S1	Audio Coupling
C64	.02	600	PC40HL-203	P488-02	DF-203	PTE4S2		4TM-S2	Audio Coupling
C65	.001	600	PC40GM-102	P688-001	D6-102	PTE6D1	GP2L-001	6TM-D1	Output Grid
C66	68	500	MC62E-680	S168	D6-680	5W5Q7	GP1K-68	M3-47	Tone Comp.
C67	.47	200	PC42DE-474	P242-47		GTP2S		2TM-P47	Sync. Sep. Cath.
C68	.05	600	PC40GM-503	P688-05	DF-503	PTE6S5		6TM-S5	Sync. Coupling
C69	.001	600	PC40GM-102	P688-001	D6-102	PTE6D1	GP2L-001	6TM-D1	Sync. Coupling
C70A	2000	50	PA4339-4		P688-002	D6-202	PTE6D2	GP2M-002	Integrator Net
B	5000				P688-005	D6-502	PTE6D5	81L-005	Integrator Net
C	5000				P688-005	D6-502	PTE6D5	81L-005	Integrator Net
C71	4700		MC61F-472		1467-004	D6-472	1D5D5	GP2M-0047	Vert. Osc. Grid
C72	.05	600	PC40GL-503	P488-05		DF-104	PTE6S5		6TM-S5 Vert. Discharge *
C73	.1	400	PC40GL-104	P488-1		DF-104	PTE4P1		4TM-P1 Vert. Sweep Coupling
C74	.1	200	PC40GK-104	P288-1		DF-104	PTE4P1		2TM-P1 Fixed Trimmer
C75	1000	500	MC61E-102	1467-001	D6-102	1W5D1	GP2L-001	1FM-21	Horiz. Sync. Coupling
C76	1000	500	MC61E-102	1467-001	D6-102	1W5D1	GP2L-001	1FM-21	Horiz. Sync. Coupling
C77	.01	400	PC40FL-103	P488-03	D6-103	PTE4S1	821-01	4TM-S1	Voltage Divider
C78	5100	500	MC61E-513	1467-005	D6-502	1D5D5	811-005	1FM-25	AFC Filter
C79	.05	200	PC40GK-503	P288-05	DF-503	PTE4S5		2TM-S5	AFC Filter
C80	3900	500	MC63F-392	1464-004		1DR5D4		M3-24	Fixed Trimmer
C81	220	500	MC60E-221	1468-00025	D6-221	5W5T25	GP2K-220	1FM-325	Horiz. MV Feedback
C82	390	500	MC60E-391	1468-00004	D6-391	5W5T4	GP2K-390	1FM-34	Horiz. MV Plate
C83	270	500	HK36M-271	1469-00025	D6-271	5R5T25	GP2K-270	M3-325	Horiz. Discharge
C84	.01	600	PC40GL-103	P688-01	D6-103	PTE6S1	821-01	6TM-S1	Horiz. Sweep Coupling
C85	.05	400	PC40GL-503	P488-05	DF-503	PTE4S5		4TM-S5	Horiz. Output Screen
C86	.25	200	PC40GK-254	P488-25		GT2P25		2TM-P25	Horiz. Output Cath.
C87	.25	600	PC40GL-254	684-25		GT6P25		6TM-P25	Damper Filter
C88	.25	400	PC40GL-254	P488-25		GT4P25		4TM-P25	Horiz. Sweep Coupling
C89	500	20000	PA4342-1	HV20C	TV3-502				H. V. Filter
C90	5000		PA4334-1	BPD-005	DD-502	1D5D5	811-005	29C1	Filament Bypass
C91	30	500		1468-00004	D6-300	5W5Q3	GP1K-30	M3-43	Line Ant. Coupling
C92	.047	600	PC42DM-473	P688-047	DF-503	PTE6S5		6TM-S47	Line Filter
C93	.005	600	PC40GM-102	P688-005	D6-502	PTE6D5	811-005	6TM-D5	Tone Comp. †
C94	2000	500		1464-002	D6-202	1R5D2	GP2M-002	M3-22	Vert. Osc. Plate †

* When a 684 (V17) is used in the vertical output stage, .1MFD is used in this application.
† Used only in chassis 26SD160 and 26SD170.
‡ Not used in all models.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SPARTON PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	330KΩ	½	PA4438-2	Q18-132X	AK-69	BT-66-S	Volume Control - Tapped @ 60KΩ - See Note 1.
B	Shaft		Not req.	Not req.	KS8-3	Not req.	Attach to R1A Per Instructions.
C	Switch		Not req.	76-1	SW8	Not req.	Attach to R1A Per Instructions
R2A	1Meg	½	PA4443	Q1J-137	AG-61-8	B-69	Vertical Hold Control
B	Shaft		Not req.	Not req.	FS-3	Not req.	Attach to R2A Per Instructions
R3A	50KΩ	½	PA4444	Q1J-123	AG-44-8	B-31	Horizontal Hold Control
B	Shaft		Not req.	Not req.	FS-3	Not req.	Attach to R3A Per Instructions
R4A	100KΩ	½	PA4445	Q1J-128	AG-49-8	B-40	Brightness Control
B	Shaft		Not req.	Not req.	FS-3	Not req.	Attach to R4A Per Instructions
R5A	25KΩ	½	PA4443-1	Q1J-120	AM-40-8	B-26	Contrast Control
B	Shaft		Not req.	Not req.	FS-3	Not req.	Attach to R5A Per Instructions
R6	1500Ω	4	PA4426-1		RTV-8	SVP-994	Focus Control - Wire Wound
R7A	2.5Meg	½	PA4431	Q1J-239	AG-64-8	AM-83	Height Control
B	Shaft		Not req.	Not req.	FK5-1/4	AK-1	Attach to R7A Per Instructions
R8	5000Ω	2	PA4411	W-5000	43-5000	VK-135	Vertical Linearity Control - Wire Wound
R9	500Ω	4	PA4448		RTV-128	SVP-985	Width Control - Wire Wound
R10	10000	2	PA4446	WK-1000	43-1000	VK-129	Horizontal Centering Control - Wire Wound

* Note 1. The deluxe models use a dual volume and tone control having Part # PA4450 in this application.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SPARTON PART No.	IRC PART No.	IDENTIFICATION CODES
					ALL RESISTORS ± 10% UNLESS OTHER WISE SPECIFIED
R11	100KΩ	20%		BTS-100K	Antenna Isolation
R12	1000Ω	20%		BTS-1000	RF Amp. Grid
R13	2700Ω			BTS-2700	RF Amp. Decoupling
R14	2200Ω			BTS-2200	Damping
R15	100KΩ	20%			Converter Grid - See Note 2
R16	18KΩ				Oscillator Grid
R17	470Ω	20%		BTS-470	Osc. Plate
R18	100Ω	20%		BTS-100	Decoupling
R19	33KΩ			BTS-33K	AGC Network
R20	56KΩ			BTS-56K	AGC Network
R21	1000Ω	20%		BTS-1000	AGC Filter
R22	5600Ω	5%		BTS-3300-5%	1st Video IF Amp. Grid
R23	560	5%			1st Video IF Amp. Cathode - See Note 3
R24	100Ω			BTS-100	1st Video IF Amp. Cathode - See Note 4
R25	100Ω	20%		BTS-100	1st Video IF Amp. Decoupling
R26	1000Ω	20%		BTS-1000	AGC Filter
R27	4700Ω	5%		BTS-4700-5%	2nd Video IF Amp. Grid
R28	100Ω	20%		BTS-100	2nd Video IF Amp. Cathode
R29	100Ω	20%		BTS-100	2nd Video IF Amp. Decoupling
R30	1000Ω	20%		BTS-1000	AGC Filter
R31	3300Ω	5%		BTS-3300-5%	3rd Video IF Amp. Grid
R32	100Ω	20%		BTS-100	3rd Video IF Amp. Cathode
R33	100Ω	20%		BTS-100	3rd Video IF Amp. Decoupling
R34	4300Ω	5%			4th Video IF Amp. Grid Choke Coil Shunt
R35	120Ω			BTS-120	4th Video IF Amp. Cathode
R36	100Ω	20%		BTS-100	4th Video IF Amp. Decoupling
R37	100Ω	20%		BTS-100	4th Video IF Amp. Plate Decoupling
R38	3900Ω	5%		BTS-3900-5%	Video Det. Diode Load
R39	2.2Meg			BTS-2.2Meg	Voltage Divider
R40	47KΩ			BTS-47K	Keyed AGC Grid
R41	27KΩ			BTS-27K	AGC Network
R42	15KΩ	5%		BTS-15K-5%	AGC Network
R43	6200Ω				Video Peaking Coil Shunt - See Note 5
R44	220KΩ			BTS-220K	Voltage Divider
R45	27KΩ			BTS-27K	Voltage Divider
R46	5600Ω	1		BTA-5600	Video Amp. Plate

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SPARTON PART No.	IRC PART No.	IDENTIFICATION CODES
R47	68KΩ	1		BTA-68K	Voltage Divider
R48	5100Ω	5% 1			Voltage Divider
R49	470KΩ	20% 1		BTS-470K	Picture Tube Cathode
R50	1000Ω	20% 1		BTS-1000	AGC Filter
R51	100KΩ	1			1st Sound IF Amp. Grid
R52	82Ω	5% 1		BTS-82-5%	1st Sound IF Amp. Cathode
R53	1000Ω	1		BTS-1000	1st Sound IF Amp. Decoupling
R54	100KΩ	1		BTS-100K	Voltage Divider
R55	470KΩ	1			2nd Sound IF Amp. Grid
R56	1000Ω	1		BTS-1000	2nd Sound IF Amp. Decoupling
R57	150Ω	1		BTS-150	Balancing
R58	47KΩ	1		BTS-47K	De-emphasis
R59	4700Ω	5% 1		BTS-4700-5%	Ratio Det. Diode Load
R60	4700Ω	5% 1		BTS-4700-5%	Ratio Det. Diode Load
R61	10KΩ	1		BTS-10K	Tone Compensation
R62	6.8Meg	1		BTS-6.8Meg	AF Amp. Grid
R63	270KΩ	1		BTS-270K	AF Amp. Plate
R64	470KΩ	1		BTS-470K	Output Grid
R65	390Ω	1		BTA-390	Output Cathode
R66	2000Ω	5		BTS-2000	Decoupling - Wire Wound
R67	270KΩ	1		BTS-270K	Feedback
R68	10KΩ	1		BTS-10K	Isolation
R69	180KΩ	1		BTS-180K	Sync. Sep. Cathode
R70	18KΩ	1		BTS-18K	Sync. Sep. Plate
R71	2.2Meg	20% 1		BTS-2.2Meg	Sync. Amp. Grid
R72	22KΩ	1		BTS-22K	Sync. Amp. Plate
R73	4.7Meg	1		BTS-4.7Meg	Horiz. Inverter Grid
R74	3300Ω	5% 1		BTS-3300-5%	Phase Inverter Cathode
R75	3300Ω	5% 1		BTS-3300-5%	Phase Inverter Plate
R76	15KΩ	20% 1		BTS-15K	Integrator
R77	8200Ω	1		BTS-8200	Integrator
R78	8200Ω	1		BTS-8200	Integrator
R79	1.1Meg	5% 1			Vertical Oscillator Grid
R80	100KΩ	1		BTS-100K	Vertical Oscillator Grid
R81	8200Ω	1		BTS-8200	Vertical Peaking - See Note 6
R82	6.8Meg	1		BTS-6.8Meg	Voltage Divider
R83	100KΩ	1		BTS-100K	Voltage Divider
R84	2.2Meg	1		BTS-2.2Meg	Vertical Output Grid
R85	1800Ω	5% 2			Vertical Output Cathode
R86	22KΩ	2		BTS-22K	Decoupling
R87	10KΩ	2		BTS-10K	Decoupling
R88	100KΩ	5% 1		BTS-100K-5%	Horizontal Phase Det. Diode Load
R89	100KΩ	5% 1		BTS-100K-5%	Horizontal Phase Det. Diode Load
R90	4.7Meg	1		BTS-4.7Meg	Horizontal Phase Det. Diode Load
R91	470KΩ	20% 1		BTS-470K	Horizontal AFC Filter
R92	1500Ω	5% 1		BTS-1500-5%	Horizontal MV Cathode
R93	5600Ω	5% 1		BTS-5600-5%	Horizontal MV Plate
R94	100KΩ	1		BTS-100K	Horizontal MV Grid
R95	200KΩ	5% 1			Horizontal MV Plate
R96	10KΩ	1		BTS-10K	Horizontal Peaking
R97	100Ω	20% 1			Parasitic Suppressor
R98	100Ω	20% 1			Parasitic Suppressor
R99	100Ω	20% 1			Parasitic Suppressor
R100	100Ω	20% 1			Parasitic Suppressor
R101	470KΩ	1		BTA-470K	Horizontal Output Grid
R102	100Ω	2		BTS-100	Horizontal Output Cathode
R103	33KΩ	2		BTS-33K	Horizontal Output Screen
R104	39KΩ	2		BTS-39K	Horizontal Output Screen
R105	10KΩ	2		BTS-10K	Decoupling
R106	22KΩ	2		BTS-22K	Horizontal Feedback
R107	1000Ω	2		BTS-1000	Width Control Shunt
R108	3.3Ω	2		BW-3.3	HV Rectifier Filament - Wire Wound
R109	1Meg	20% 1			HV Filter
R110	580Ω	2		BW-2-580	Focus Coil Shunt - Wire Wound
R111	580Ω	2		BW-2-580	Focus Coil Shunt - Wire Wound
R112	100KΩ			BTS-100K	Vert. Oscillator Transformer Shunt - See Note 7

Note 2. Some models use 47KΩ resistor in this application.
Note 3. Some models use 47Ω resistor in this application.
Note 4. Some models use 82Ω resistor in this application.
Note 5. Some models use 6800Ω resistor in this application.
Note 6. Some models use 4700Ω resistor in this application.
Note 7. Not used in all models.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: SPARTON PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.
T1	117VAC @ 1.5A	760VCT @ 200ADC	380VCT @ 3A	5V @ 9A	AB4009-1			

TRANSFORMER (FILAMENT)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: SPARTON PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.
T2	117VAC @ .8A	5V @ 3A	6.3V @ 1.2A	6.3V @ 9.6A	AB44020-1			

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: SPARTON PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	NOTES
T3	150Ω	82Ω	AB47006-4	A-8111 ③	A-3000	TB0-3 ③	Vert. Block Osc. Trans.
T4	300Ω	1.4Ω	PC70010				Horizontal Output Trans.
	Tap 29Ω	SEC. 2 4.9Ω					
		Tap 4.3Ω SEC. 3 0Ω					
T5	670Ω	6.2Ω	AB44062-3	A-8115 ③	A-3035 ③	TS0-1 ③	Vertical Output Trans.
T6A	13Ω		PC70009	DY-7	MDF70		Horizontal Deflection Coil
B	82Ω						Vertical Deflection Coil
T7	420Ω		PC70008				Focus Coil

③ New mounting hole.

PARTS LIST CONTINUED ON PAGE 15

SPARTON MODELS 5025, 5026, 5029, 5030, 5035, 5036, 5037, 5076, BB, 5077, BB, 5079, 5080, 5082, 5083, 5088, 5089, 5090

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		SPARTON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T8	6.4KΩ	3.4Ω	270Ω	.4Ω	AB44086-3	A-3277 ③	A-3019	R0-9 ③	② New mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			SPARTON PART No.	VIKING PART No.	QUAM PART No.	
	FIELD RES.	V. C. IMP.				
SP1A	PM	3.4Ω	PC63000-12①	10J12	10A4A	① Used in models 5076, 5077, 5090
B	PM	3.4Ω	PC63000-21②		57E1606	② Used in model 5090
C	EM	3.4Ω	PC63000-29③			③ Used in models 5076BB, 5077BB
D	PM	3.4Ω	PC63000-31④			④ Used in models 5035, 5036
E	PM	3.4Ω	PC63000-32⑤			⑤ Used in models 5079, 5080, 5082, 5083
F	PM	3.4Ω	PC63000-33⑥	5J4	5A1	⑥ Used in models 5025, 5026, 5035, 5036, 5037
	CONE DIA.	V. C. DIA.				
SP2 A	10"	1"				
B	10"	1"				
C	10"	1"				
D	5"X7"	1"				
E	12"	1"				
F	5"	9/16"				

FILTER CHOKE

ITEM No.	RATINGS		REPLACEMENT DATA					INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE @ CURRENT 1000 ~/s	SPARTON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.200	110Ω	5.9 Henries	AB47009-1	C-1646 ②	C-3196 ③	R-7200 ② ③	New mounting hole.
L2	.120	110Ω	5.9 Henries	AB47009-1 *	C-1646 ②	C-3196 ③	R-7200 ②	

* Not used in Models 5076BB and 5077BB which have electro-dynamic speaker.

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
				SPARTON PART No.	MEISSNER PART No.	
		PRI.	SEC.			
L3	Antenna Tran.	.1Ω	0Ω			Part of Tuner Part # AB43572-1
L4	Ant. Coil	0Ω				Part of Tuner Part # AB43572-1
L5	RF, Mixer Grid and Osc. Coil	0Ω				Part of Tuner Part # AB43572-1
L6	RF Coil	0Ω		AB4608-1		Part of Tuner Part # AB43572-1
L7	Mixer Grid Coil	0Ω				Part of Tuner Part # AB43572-1
L8	Osc. Coil	0Ω				Part of Tuner Part # AB43572-1
L9	Cath. Choke	.2Ω				1.8 Microhenries (Part of Tuner Part # AB43572-1)
L10	Fil. Choke	.1Ω				1.8 Microhenries (Part of Tuner Part # AB43572-1)
L11	1st Video IF	.1Ω				Part of Tuner Part # AB43572-1
L12	Fil. Choke	.1Ω		AA6651-1		3 Microhenries
L13	Sound Trap	0Ω		AB43523-12		
L14	Fil. Choke	.1Ω		AA6651-1		3 Microhenries
L15	2nd Video IF	.1Ω		AA6408-1		
L16	Fil. Choke	.1Ω		AA6651-1		3 Microhenries
L17	3rd Video IF	.1Ω		AA6408-1		
L18	Fil. Choke	.1Ω		AA6651-1		3 Microhenries
L19	4th Video IF	.1Ω		AA6408-1		
L20	Grid Choke	3Ω		AA6650-1		25 Microhenries
L21	Fil. Choke	.1Ω		AA6651-1		3 Microhenries
L22	5th Video IF	.6Ω		AA6364-1		
L23	RF Choke	3Ω		AA6650-1		25 Microhenries
L24	Fil. Choke	.1Ω		AA6651-1		3 Microhenries
L25	Peaking	8.5Ω		AA6402-8	19-1921 ①	146 Microhenries(Wound on 4.7KΩ Resistor)
L26	Peaking	19Ω				600 Microhenries
L27	Peaking	11Ω		AA6402-7	19-1923 ②	213 Microhenries(Wound on 6.8KΩ Resistor)
L28	4.5MC Trap	6Ω		AA6407-1		
L29	Peaking	15Ω		AA6613-10	19-1923	420 Microhenries
L30	1st Sound IF	1.9Ω		AA6364-2		
L31	2nd Sound IF	2.3Ω	2.3Ω	AA6667-5		
L32	Ratio Det. Trans.	5Ω	1.4Ω	AA6684-4		
L33	Horiz. Osc. Coil	68Ω		AA6403-2		
L34	AC Line Choke	.1Ω .1Ω		AA6664-1		Not used on all Models.

① Parallel With 4.7KΩ Resistor
② Parallel With 6.8KΩ Resistor.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			SPARTON PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M1	3AG	1/8Amp.	PA4214-4⑦		312. 062		⑦ Some models use 1/4A 250V fuse. Replace with Littelfuse 312. 250
M2	3AG	3/8Amp.	PA4212-3 ⑧		312. 375		⑧ Not used in all models

MISCELLANEOUS

ITEM No.	PART NAME	SPARTON PART No.	NOTES
M3A	RF Tuner	AB43572-1	Complete with Tubes (Chassis 26SB160, 26SD160, 26SD170)
B	RF Tuner	AB43572-2	Complete with Tubes (Chassis 26SB160L)
M4A	Ion Trap	PA1248	For 16KP4 Tube
B	Ion Trap	PA1254	For 16KP4 Tube
C	Ion Trap	PA1246-3	For 17 inch Tube
B2	Trimmer	PA4368	Horizontal Drive (30-270MMF)
	Cover Assembly	AB43574-1	Front Panel Service Controls (Models 5025, 5026, 5076, 5077, 5076BB, 5077BB, 5029, 5030, 5079, 5080, 5082, 5083)
	Cover Assembly	AB43574-2	Front Panel Service Controls (Model 5090)
	Knob	PB40330	Channel Tuner (Models 5029, 5030, 5079, 5080, 5082, 5083, 5088, 5089, 5090)
	Knob	PB40329	Volume (Models 5029, 5030, 5079, 5080, 5082, 5083, 5088, 5089)
	Knob	PB40328	Tone (Models 5029, 5030, 5079, 5080, 5082, 5083, 5088, 5089, 5090)
	Knob	PA5652	Dummy Dual (Models 5025, 5026, 5076, 5077, 5076BB, 5077BB, 5035, 5036, 5037)
	Knob	PA5650	Antenna (For Models With Built-In Antenna)
	Knob	PA5651	Front Panel Service Controls
	Knob	PA5653	Tuning (Models 5025, 5026, 5076, 5077, 5076BB, 5077BB, 5035, 5036, 5037)
	Knob	PB40831	Dial Indicator (Models 5029, 5030, 5079, 5080)
	Knob	PA5646-1	Dial Indicator (Models 5025, 5026, 5076, 5077, 5076BB, 5077BB, 5035, 5036, 5037)

PARTS LIST AND DESCRIPTIONS (Continued)

R17	100KΩ		½	28006	BTS-100K	Tone Compensation
R18	3900Ω		½	28165	BTS-3900	Tone Compensation
R19	1500Ω		½	28160	BTS-1500	3rd AF Amp. Cathode
R20	39KΩ		½	28176	BTS-39K	3rd AF Amp. Plate
R21	22KΩ	5%	½	149234	BTS-22K-5%	Phase Inv. Grid
R22	1800Ω		½	28161	BTS-1800	Phase Inv. Cathode
R23	39KΩ		½	28176	BTS-39K	Phase Inv. Plate
R24	150KΩ	5%	½	149232	BTS-150K-5%	Output Grid
R25	350Ω		5	46369	1 3/4A-350	Output Cathode - See Note
R26	180KΩ	5%	½	149233	BTS-180K-5%	Output Grid
R27	10KΩ		½	28170	BTS-10K	Feedback Network
R28	47KΩ		2	70056	BTB-47K	Voltage Divider
R29	4700Ω		1	70939	BTA-4700	Voltage Divider
R30	3900Ω		½	28165	BTS-3900	Bleeder
R31	10KΩ		2	46675	BTB-10K	Filter
R32	2500Ω		5	46370	1 3/4A-2500	Filter - Wire Wound

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	STROM-CARL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @1.5A	780VCT .088ADC	5V @ 2A	6.3V @ 2.6A	46559	PM8409	C-2994	PH-90 ①

① New mounting hole.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		STROM-CARL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	10.5KΩ CT	6 To 8Ω	334Ω CT	.4Ω	46504	A-3831	A-3027	PC0-80 ①	① New mtg. hole.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D.C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ↜)	Strom-Carl PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.087A	130Ω	3 Henries	46505	C-2309 ①		R-885 ①	① New mtg. hole.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			STROM-Carl. PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M1	3AG	3 Amp.	25156		312003	342001	

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					STROM-CARL. PART No.		
M2	Bayonet	7.5	.2	White	28025		Type # 51

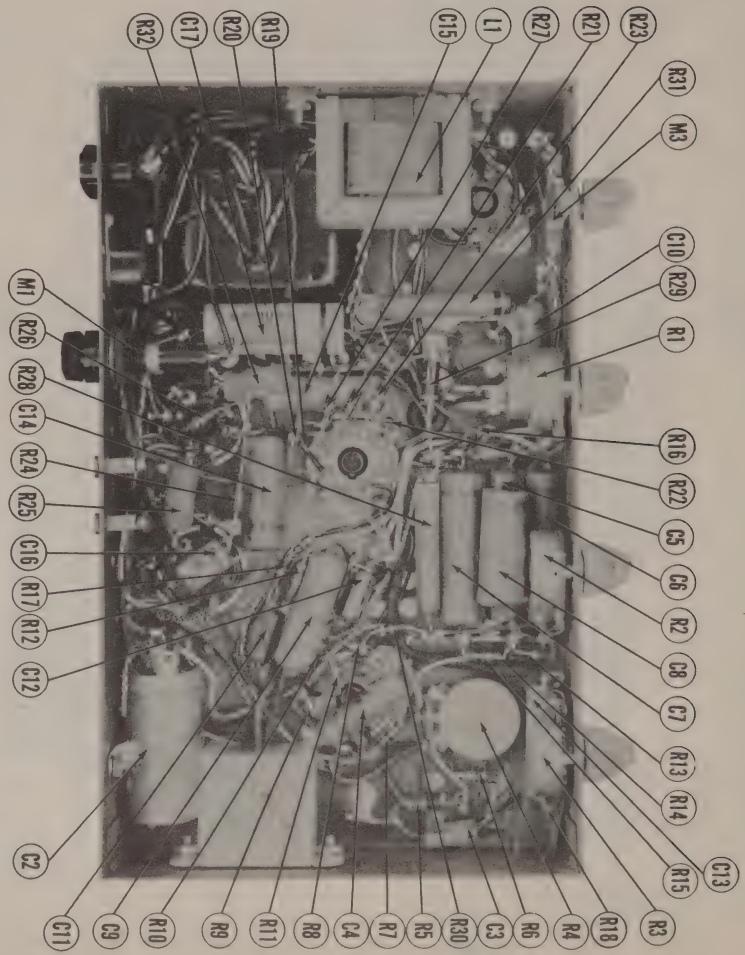
MISCELLANEOUS

ITEM No.	PART NAME	STROM-CARL PART No.	NOTES
MS	Switch	35836	Fidelity

SET 128

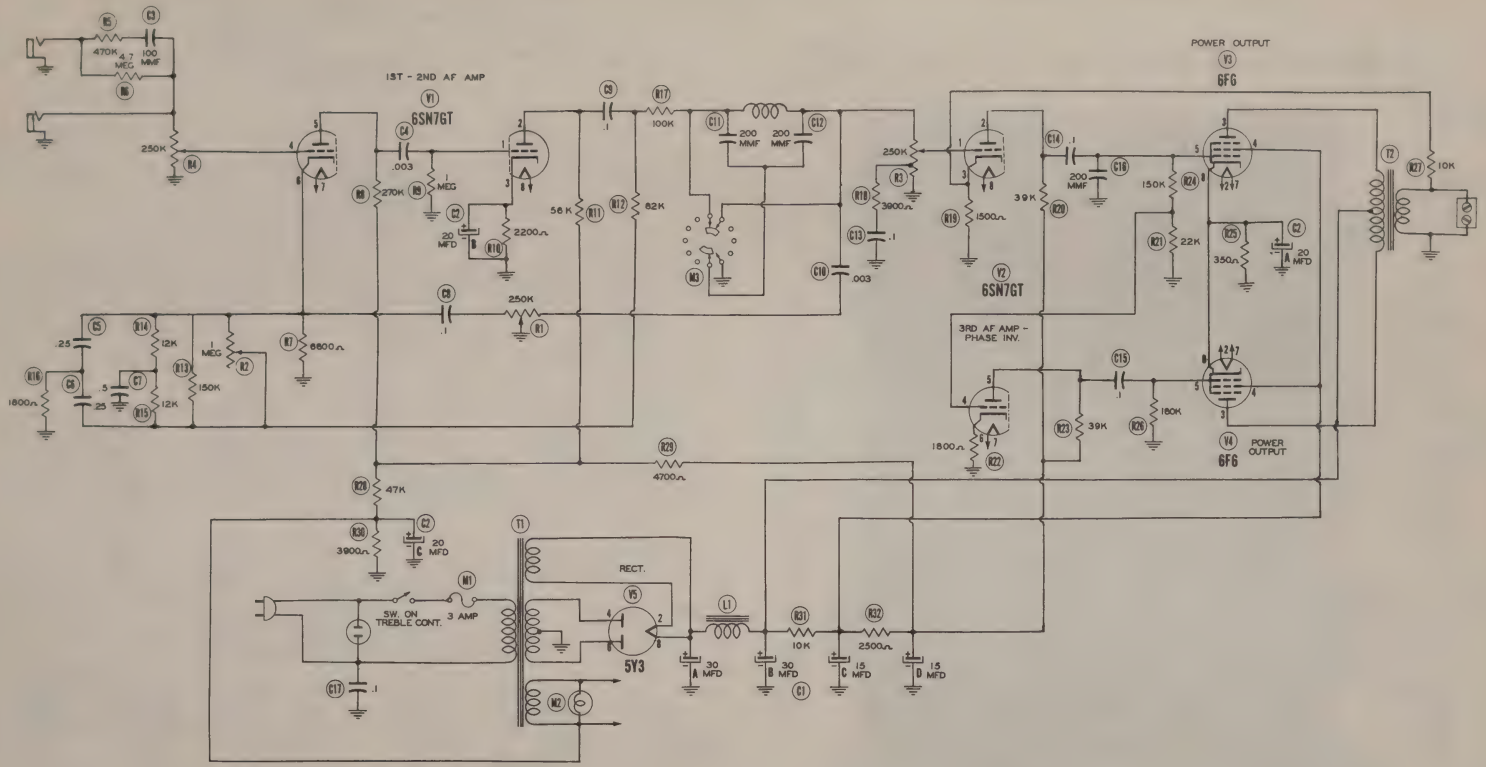
FOLDER 14

CHASSIS—BOTTOM VIEW



STROMBERG-CARLSON MODEL AR-37

STROMBERG-CARLSON MODEL AR-37



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SN7GT	0V	95VDC	3.3VDC	0V	65VDC	3.8VDC	¶	¶
V 2	6SN7GT	0V	110VDC	3.8VDC	0V	120VDC	4.7VDC	¶	¶
V 3	6F6	0V	¶	370VDC	315VDC	0V	0V	¶	25VDC
V 4	6F6	0V	¶	370VDC	315VDC	0V	0V	¶	25VDC
V 5	5Y3GT	0V	380VDC	0V	360VAC	0V	360VAC	0V	380VDC

¶ 6.3VAC MEASURED ACROSS FILAMENTS

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SN7GT	1Meg	†70KΩ	2.2KΩ	250KΩ	†285KΩ	6.8KΩ	▲.2Ω	▲ 0Ω
V 2	6SN7GT	0Ω	†50KΩ	1.5KΩ	22KΩ	†50KΩ	1.8KΩ	▲ 0Ω	▲.2Ω
V 3	6F6	0Ω	▲.2Ω	†300Ω	†2.6KΩ	170KΩ	Inf.	▲0Ω	350Ω
V 4	6F6	0Ω	▲.2Ω	†300Ω	†2.6KΩ	180KΩ	22KΩ	▲0Ω	350Ω
V 5	5Y3GT	Inf.	40KΩ	Inf.	90Ω	Inf.	90Ω	Inf.	40KΩ

▲ MEASURED FROM JUNCTION OF R 28 AND R 30
† MEASURED FROM PIN 2 OF V 5

THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1 - DC Voltage measurements are at 20, 000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - All controls at minimum, proper output load connected.

STROMBERG-CARLSON
MODEL AU-34

STROMBERG-CARLSON
MODEL AU-34

STROMBERG-CARLSON MODEL AU-34

TRADE NAME	Stromberg - Carlson, Model AU-34
MANUFACTURER	Stromberg - Carlson Co., 100 Carlson Rd., Rochester 3, New York
TYPE SET	AC Operated Audio Amplifier
TUBES (SIX)	Types 6SJ7 Mike Pre-Amp., 6SF5 1st AF Amp., 6N7GT 2nd AF Amp., - Phase Inverter, (2) 6L6 Power Output, 5U4G Rectifier
POWER SUPPLY	110-120 Volts AC RATING 1.2 Amp. @ 117 Volts AC

HOWARD W. SAMS & CO., INC. • Indianapolis Indiana

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PARTS LIST AND DESCRIPTIONS

STROMBERG-CARLSON
MODEL AU-34

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: STROM-CARL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Mike Pre Amp.	6SJ7	6SJ7	8N	
V2	1st. AF Amp.	6SF5	6SF5	6AB	
V3	2nd. AF Amp. Phase INV.	6N7	6N7	8B	
V4	Power Output	6L6G	6L6G	7AC	
V5	Power Output	6L6G	6L6G	7AC	
V6	Rectifier	5U4G	5U4G	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: STROM-CARL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	30	500	46320	AF88K		UP3450		TVL-2830	▲ Filter
B	30	500							■ Filter
C2A	10	350	34698	AF222J5A		UP11135C		TVL-4723	▲ Decoupling
B	10	300							■ Decoupling
C	10	250							▲ Mike Pre-Amp Dec.
D	20	50							2nd AF Amp. Cath.
C3	50	25	41157	PRS25/50		BR502A		TVA-1206	Mike Pre-Amp Cath.
C4	50	50	46327	PRS50/50		BR505		TVA-1308	Output Cath.
C5	.1	400	25483	P488-1	DF-104	PTE4P1		4TM-P1	Mike Pre-Amp Screen
C6	.05	400	40632	P488-05	DF-503	PTE4S5		4TM-S5	Audio Coupling
C7	.03	400	27782	P688-03		PTE6S3		6TM-S3	1st AF Amp. Cath.
C8	.01	400	25485	P488-01	D6-103	PTE4S1	821-01	4TM-S1	Tone Comp.
C9	100	500	24559	1468-0001	DC-101	5W5T1	GP1K-100	1FM-31	Tone Comp.
C10	.05	400	40632	P488-05	DF-503	PTE4S5		4TM-S5	Audio Coupling
C11	.1	400	25483	P488-1	DF-104	PTE4P1		4TM-P1	Audio Coupling
C12	.1	400	25483	P488-1	DF-104	PTE4P1		4TM-P1	Audio Coupling
C13	.003	400	46315	P688-003	D6-302	PTE6D3	GP2M-003	6TM-D3	Tone Comp.
C14	.1	400	25483	P488-1	DF-104	PTE4P1		4TM-P1	Filament Bypass

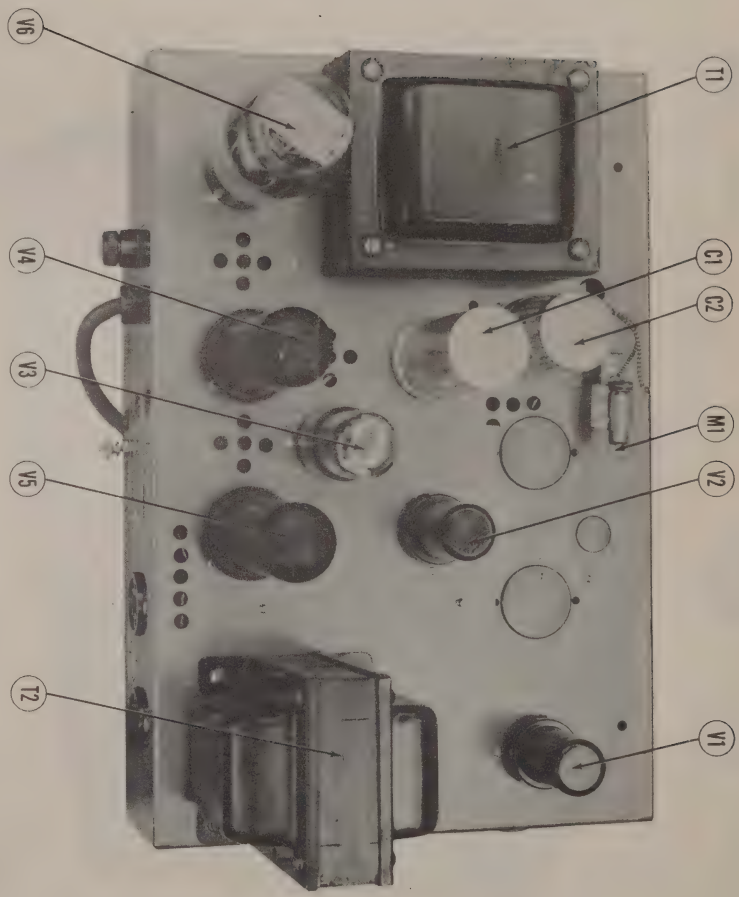
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Strom-Carl PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1Meg	½	46313	Q13-137	AM-63-Z	B-70	Mike Volume Control
B	Shaft		Not Req	Not Req	FS-3	Not Req	Attach to R1A Per Instructions
R2A	1Meg	½	46313	Q13-137	AM-63-Z	B-70	Phono. Volume Control
B	Shaft		Not Req	Not Req	FS-3	Not REq	Attach to R2A Per Instructions
R3A	1Meg	½	39838	Q11-137	AM-61-S	B-69-S	Treble Control
B	Shaft		Not Req	Not Req	FS-3	Not Req	Attach to R3A Per Instructions
C	Switch		Not Req	Not Req	SW-A	Not Req	Attach to R3A Per Instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: STROM-CARL PART No.	IRC PART No.	IDENTIFICATION CODES
R4	1Meg	½	28191	BTS-1Meg	Mike Pre-Amp Grid
R5	1500Ω	½	28160	BTS-1500	Mike Pre-Amp Cathode
R6	1.5Meg	½	28193	BTS-1.5Meg	Mike Pre-Amp Screen
R7	150KΩ	½	27640	BTS-150K	Mike Pre-Amp Plate
R8	22KΩ	½	27407	BTS-22K	Mike Pre-Amp Decoupling
R9	150KΩ	½	27640	BTS-150K	Voltage Divider
R10	1Meg	½	28191	BTS-1Meg	Isolation
R11	1Meg	½	28191	BTS-1Meg	Isolation
R12	470KΩ	½	28187	BTS-470K	1st AF Amp Grid
R13	1200Ω	½	28159	BTS-1200	1st AF Amp Cathode

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	Stromberg-Carlson PART No.	IRC PART No.	
R14	100KΩ	½	28006	BTS-100K	1st AF Amp Plate
R15	680KΩ	½	28189	BTS-680K	2nd AF Amp Grid
R16	100KΩ	½	28006	BTS-100K	2nd AF Amp Plate
R17	4700Ω	½	28186	BTS-4700	Phase Inv. Grid
R18	1500Ω	½	28160	BTS-1500	Phase Inv. Cathode
R19	100KΩ	½	28006	BTS-100K	Phase Inv. Plate
R20	100KΩ	½	28006	BTS-100K	Output Grid
R21	250Ω	10	46358	1 3/4A-250	Output Cathode - Wire Wound
R22	100KΩ	½	28006	BTS-100K	Output Grid
R23	470KΩ	½	28187	BTS-470K	Feedback
R24	2500Ω	10	46359	1 3/4A-2500	Filter - Wire Wound
R25	5000Ω	10	36361	1 3/4A-5000	Filter - Wire Wound
R26	15KΩ	10	26363	1 3/4A-15K	Bleeder - Wire Wound

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	STROM-CARL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC ④ 1.2A	750VCT .142ADC	5VAC ④ 3.2A	6.3VAC ⑤3.2A	33026	PM8411 ①	P2953 ①	

① Drill new mounting holes

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		Strom- Carl PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	1.35K CT	500Ω Taps④ 4Ω, 8Ω, 15Ω,& 250Ω	123Ω CT	6.5Ω Taps④ .4Ω, .5Ω,& .7Ω	46326				

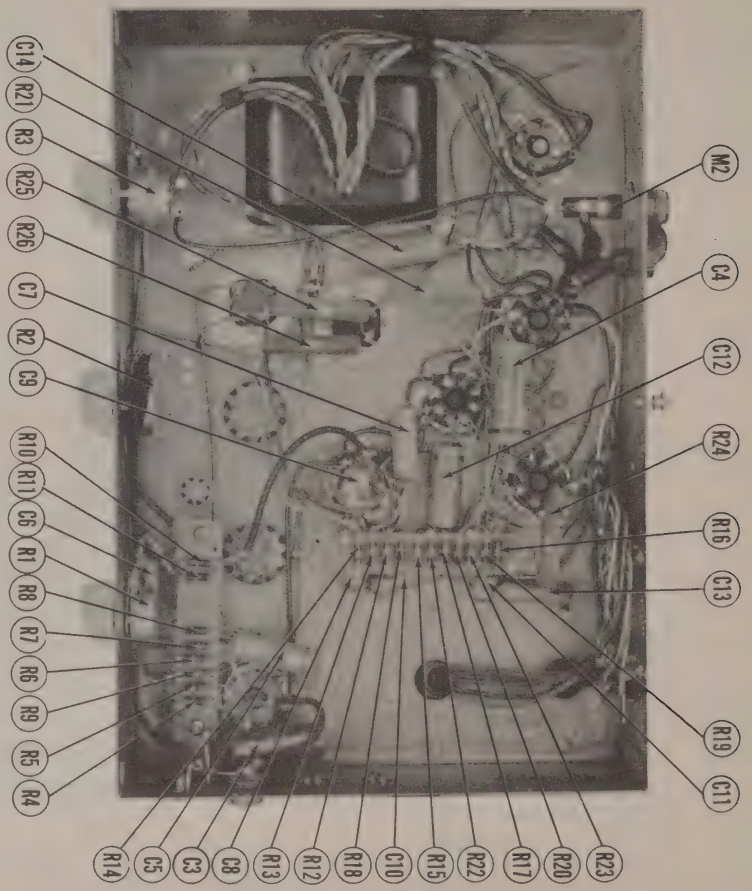
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					Strom- Carlson PART No.		
M1	Bayonet	7.5	.2	White	28025		Type No. TS-51

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			STROMBERG-CARLSON PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M2	3AG	3Amp	25156	27958	212003	342001	

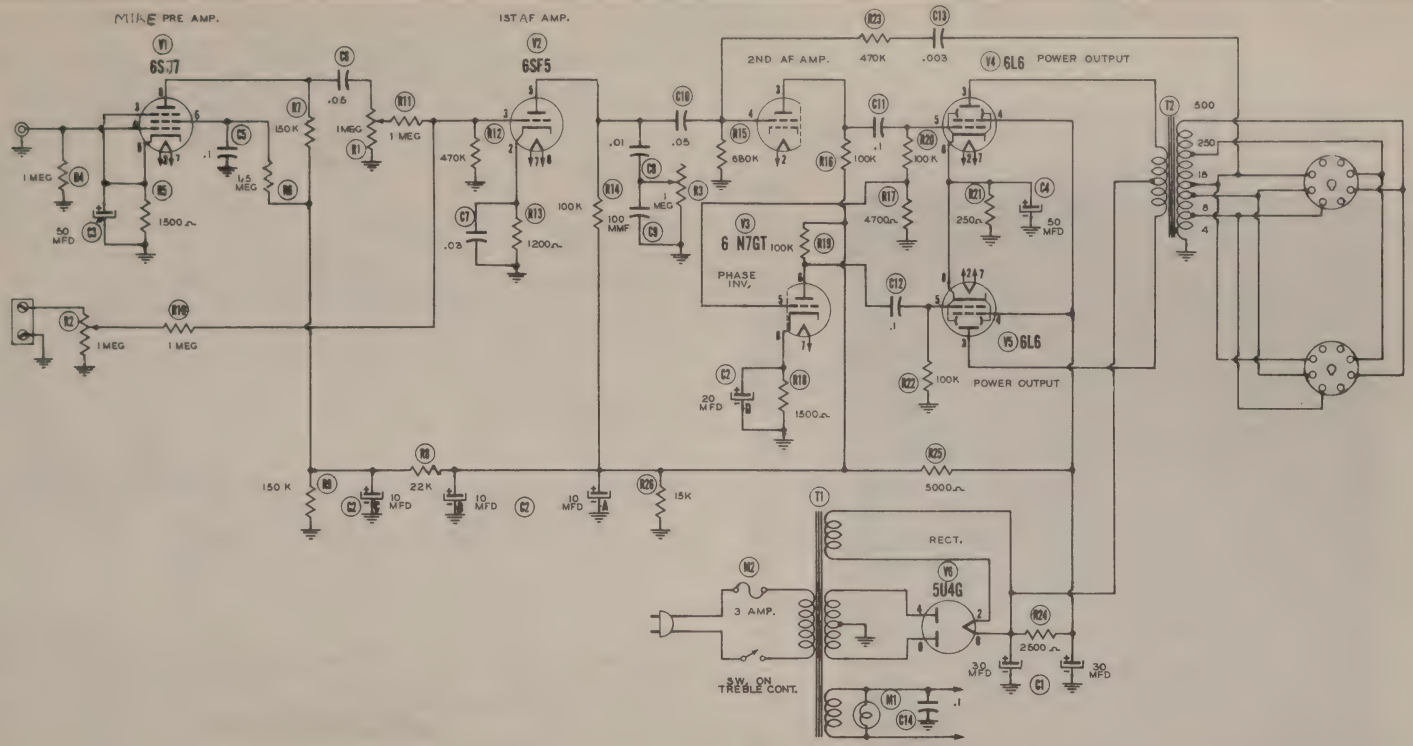
CHASSIS—BOTTOM VIEW



SET 128 FOLDER 15

STROMBERG-CARLSON MODEL AU-34

STROMBERG-CARLSON MODEL AU-34



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SJ7	0V	¶	.7VDC	0V	.7VDC	25VDC	¶	130VDC
V 2	6SF5	0V	1.2VDC	0V	0V	145VDC	0V	¶	¶
V 3	6N7GT	0V	¶	140VDC	0V	0V	140VDC	¶	3.4VDC
V 4	6L6	0V	¶	400VDC	365VDC	0V	0V	¶	28VDC
V 5	6L6	0V	¶	400VDC	365VDC	0V	0V	¶	28VDC
V 6	5U4G	0V	400VDC	0V	370VAC	0V	370VAC	0V	400VDC

¶ 6.3 VAC MEASURED ACROSS FILAMENTS

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SJ7	0Ω	Inf.	1.5KΩ	1Meg	1.5KΩ	†1.5Meg	Inf.	†175KΩ
V 2	6SF5	0Ω	1.2KΩ	270KΩ	Inf.	†105KΩ	Inf.	Inf.	Inf.
V 3	6N7GT	0Ω	Inf.	†105KΩ	680KΩ	4.7KΩ	†105KΩ	Inf.	1.5KΩ
V 4	6L6	0Ω	Inf.	†80Ω	†2.5KΩ	105KΩ	Inf.	Inf.	250Ω
V 5	6L6	0Ω	Inf.	†80Ω	†2.5KΩ	100KΩ	Inf.	Inf.	250Ω
V 6	5U4G	Inf.	20KΩ	Inf.	50Ω	Inf.	50Ω	Inf.	20KΩ

† MEASURED FROM PIN 8OF V6

THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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128-15

1 - DC Voltage measurements are at 20, 000 ohms per volt ; AC Voltages measured at 1000 phms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - All controls at maximum, proper output load connected.

PHOTOFACT* Folder

*Trade mark

SYLVANIA MODEL
1210X (CH. 1-381)

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SYLVANIA
MODEL 1210X (Ch.1-381)

SYLVANIA
MODEL 1210X (Ch.1-381)

SYLVANIA MODEL 1210X

TRADE NAME	Sylvania, Model 1210X (Chassis 1-381)
MANUFACTURER	Sylvania Elect. Prod. Inc., Colonial Radio And Tel. Div., 254 Rano St., Buffalo, N.Y.
TYPE SET	Television Receiver
TUBES	Twenty Four
POWER SUPPLY	110-120 Volts AC- 60 Cycle
RATING	2.1 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13

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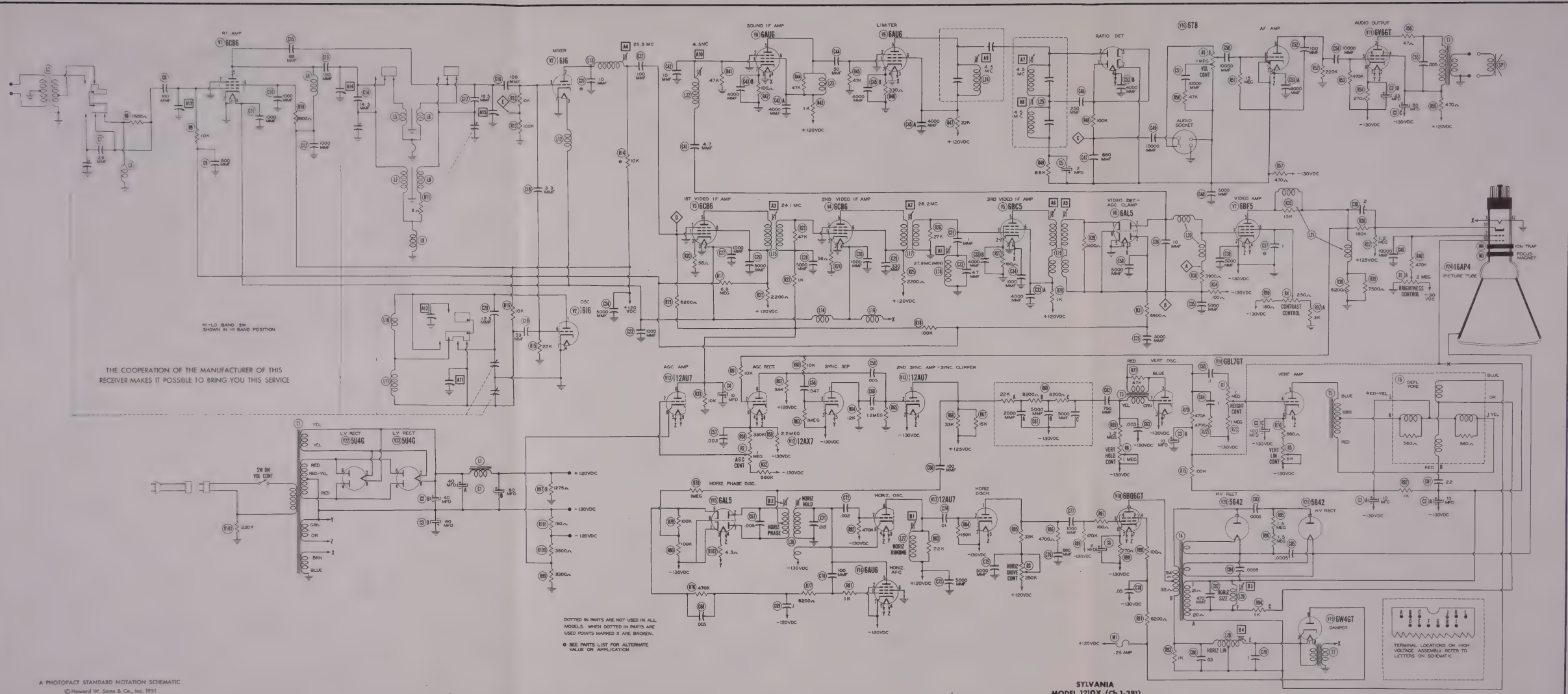

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SYLVANIA
MODEL 1210X (Ch.1-381)

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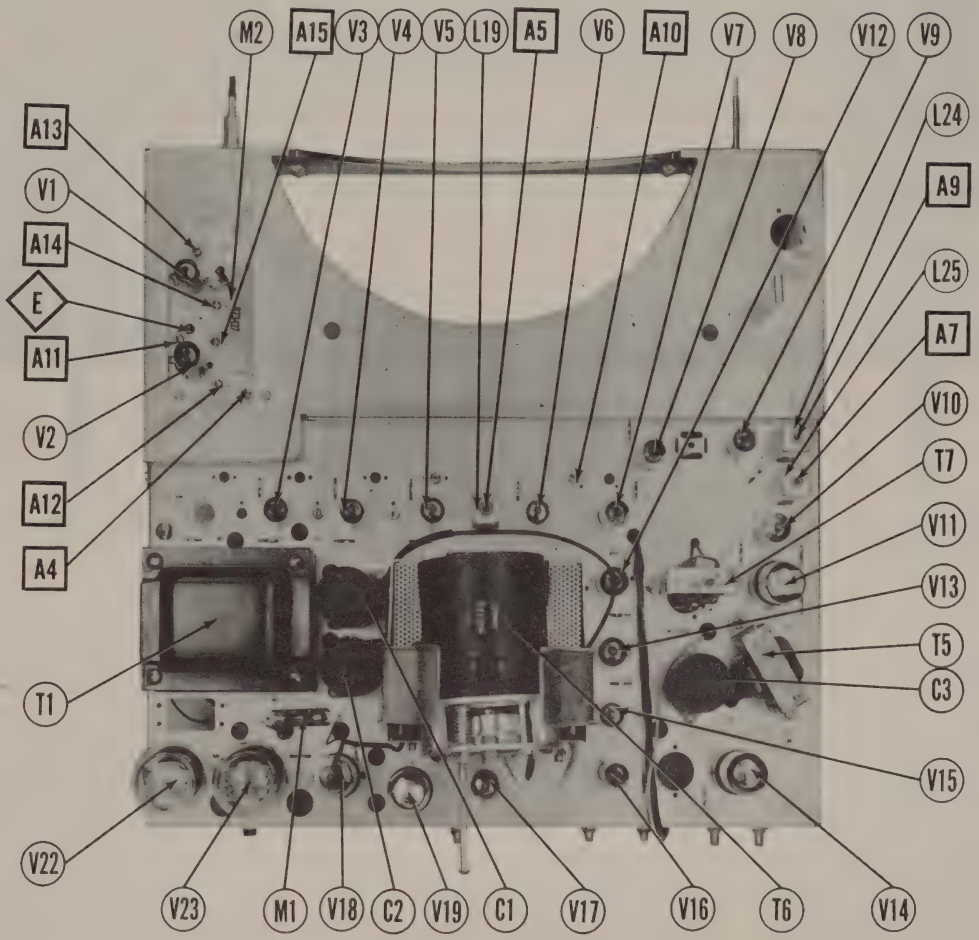
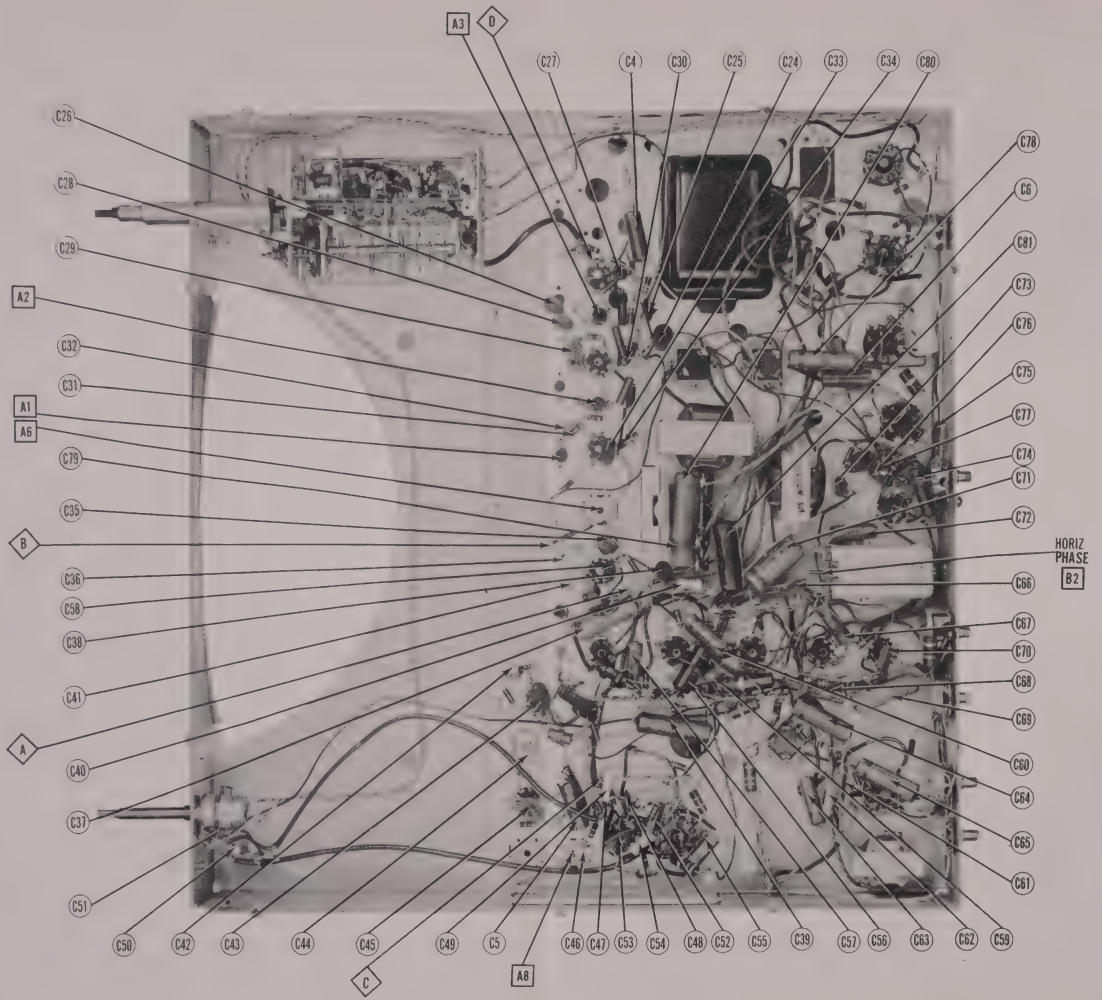
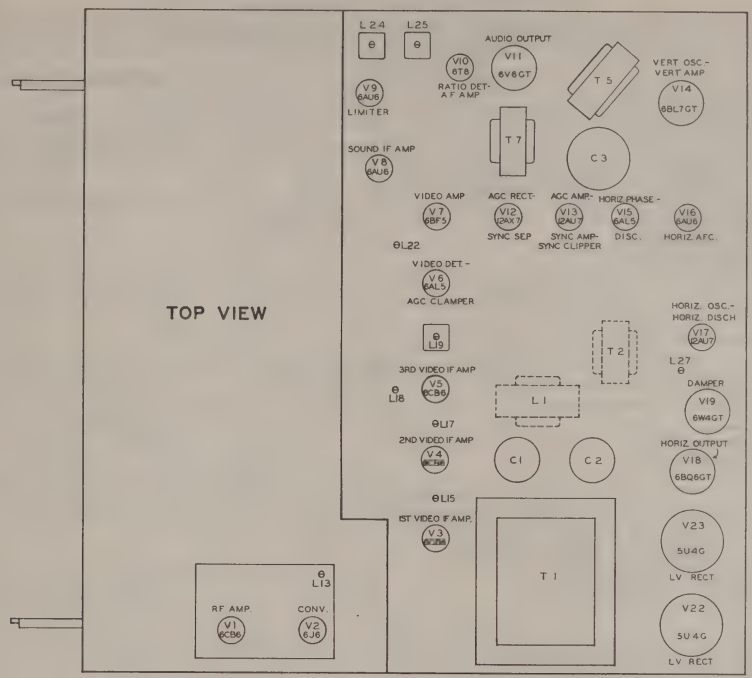
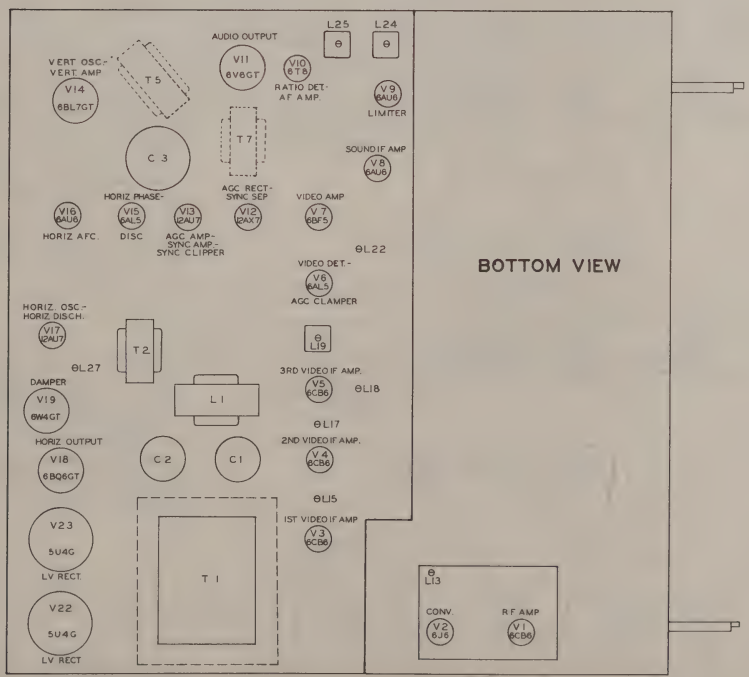


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION





TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard may be eliminated by removing the horizontal oscillator tube (V17) from its socket.

VIDEO IF ALIGNMENT

Remove the converter tube (V2) from its socket and replace it with a 6J6 which has pin 1 removed. This will disable the local oscillator and prevent the possibility of erroneous indications.

Connect the negative lead of a 3 volt battery, positive to chassis, across C4.

During video IF alignment the leads of the VTVM are connected to approximately 135 volts with respect to chassis, avoid grounding or touching the VTVM case.

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	Not used	27.9MC	Any	USE VTVM DC probe to Point (A) Common to Point (B)	A1	Adjust for MINIMUM deflection.
2.	"	"	"	26.2MC	"	"	A2	Adjust for maximum deflection.
3.	"	"	"	24.1MC	"	"	A3	"
4.	"	"	"	25.3MC	"	"	A4	"
5.	"	High side to pin 1 (grid) of 6BC5 (V5). Low side to chassis.	25MC (10MC SWP)	21.9MC 27MC	"	Vert. amp. to Point (A). Low side to chassis.	A5, A6	Adjust for response curve similar to figure 1 with markers as shown.
6.	Direct	High side to an ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	"	24MC	"	"		Check for response curve similar to figure 2. If necessary retouch A2 thru A6 for proper response.

SOUND IF ALIGNMENT

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	.005MFD	High side to pin 7 (plate) of 6AL5 (V6). Low side to chassis.	4.5MC (450KC SWP)	4.5MC	Any	Vert. amp. to Point (C). Low side to chassis.	A7, A8, A9, A10	Adjust A7 and A8 so 4.5MC occurs at center of crossover lines as per figure 3. Adjust A8, A9 and A10 for maximum amplitude and straightness of crossover lines.

TUNER ALIGNMENT

The use of two marker generators is required to align this tuner. Marker gen No. 1 is connected across the sweep generator with a 2 or 3 MMF capacitor, (if the sweep generator contains a built-in marker it will be used for marker No. 1). The frequency to which marker No. 1 is tuned will be indicated in the table by an asterisk (*).

Marker generator No. 2 is connected through a 2 or 3MMF capacitor to the tuner output, (grid of first video IF amp). The frequency to which marker No. 2 is tuned will be indicated in the table by a dagger (†).

Remove the dummy converter tube and replace the original 6J6 in its socket.

Remove the second video IF amp. tube (V4) from its socket to prevent feedback from the IF portion.

Connect the negative lead of a 3 volt battery to the tuner AGC terminal, connect the positive lead to chassis.

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

The sweep generator output lead should be terminated with its characterisitic impedance, usually 50 ohms.

HIGH BAND OSCILLATOR ALIGNMENT

Turn the tuner band switch to "high band".

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	177MC (10MC SWP)	*175.25MC †21.9MC	Tuning gang fully closed	Vert. amp. thru detector (figure 4) to Point (D). Low side to chassis.	L 10	Remove bottom cover. With a non-metallic pick vary the turn spacing of L 9 until markers coincide as shown in figure 5. If markers separate when cover is replaced, repeat adjustment of L 10 compensating for change and replace cover. Repeat this procedure until markers coincide with cover in place.
9.	"	"	213MC (10MC SWP)	*215.75MC †26.4MC	Tuning gang fully open.	"	A 11	Adjust A 11 so markers coincide. Recheck low end of tuning range. If necessary repeat steps 8 and 9 until proper tuning range is obtained.

LOW BAND OSCILLATOR ALIGNMENT

Turn the tuner band switch to "low band".

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	57MC (10MC SWP)	*55.75MC †21.9MC	Tuning gang fully closed	Vert. amp. thru detector (figure 4) to Point (D). Low side to chassis	L 11	Remove bottom cover and adjust L 11 turns until markers coincide. If markers separate when cover is replaced, repeat adjustment of L 11 compensating for change and replace cover. Repeat this procedure until markers coincide with cover in place.
11.	"	"	85MC (10MC SWP)	*84.35MC †26.4MC	Tuning gang fully open	"	A12	Adjust A12 so markers coincide. Recheck low frequency end of tuning range. If necessary repeat steps 10 and 11 until proper tuning range is obtained.

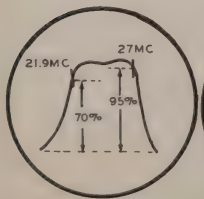


FIG.1

FIG.2

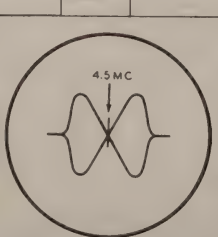


FIG. 3

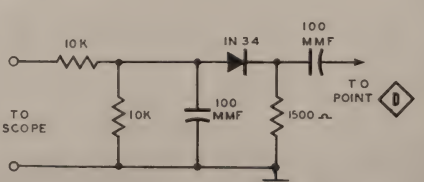


FIG.4

ALIGNMENT INSTRUCTIONS (CONT.)

HIGH BAND RF ALIGNMENT

Turn the band switch to "high band".
For step 12 set the tuner to channel 7 by connecting the scope and generator as during oscillator alignment. Set the sweep generator to channel 7. Set marker No. 1 to 175.25MC and marker No. 2 to 26.4MC. Then turn the tuning control until the markers coincide. Leave the tuning control at this position during step 12.
For step 13 set tuner to channel 13 by feeding in 215.75MC and 21.9MC and tuning until markers coincide.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
12.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	177MC (10MC SWP)	175.25MC 179.75MC	7	Vert. amp. thru 10KΩ to Point ⊲ Low side to chassis.	L 3, L 5, L 6	Adjust L 5 and L 6 by pushing the coils ontо or off of the brass plugs until a response curve similar to figure 6 is obtained. Expand or compress L 3 turns for maximum amplitude of response. L 5 and L6 are properly adjusted when a slight change in inductance causes a change in amplitude with out noticeable change in bandwidth. L 3 is properly adjusted when slight change causes response curve to rock evenly. Bandwidth is adjusted by altering the dress of L 5 and L6 around leads past the cut out in the shield plate.
13.	"	"	213MC (10MC SWP)	211.25MC 215.75MC	13	"	A13, A14, A15	Replace bottom cover. Adjust for response curve similar to figure 5. Recheck channel 7. If necessary make compromise adjustment of L5 and L6.

LOW BAND RF ALIGNMENT

Turn the band switch to "low band".
For step 14 set the tuning control to channel 2 by feeding a 59.75MC and 21.9MC marker into the tuner as during oscillator alignment and tuning until markers coincide.
For step 15 set tuning control to channel 6 by adjusting for coincidence of 26.4MC and 83.25MC markers.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
14.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	57MC (10MC SWP)	55.25MC 59.75MC	2	Vert. amp. thru 10KΩ to Point ⊲ Low side to chassis.	L 2, L7, L8	Expand or compress of L7 and L8 for response curve similar to figure 6. Adjust turns of L2 for maximum amplitude of response. L7 and L8 are properly adjusted when a slight change in inductance causes a reduction of amplitude without noticeable narrowing of bandwidth. The bandwidth is adjusted by adjusting the turns of L9. Replace bottom cover if response changes make compromise adjustments of L2, L7 and L8.
15.	"	"	85MC	83.25MC 87.75MC	6	"		Check response on channel 6. If the markers fall below 70% response, or if either peak falls below 70% make compromise adjustments of L2, L7 and L8. Recheck channel 2 to see that it has not been seriously effected.

AGC ADJUSTMENT

Connect a good antenna to the receiver and tune to a channel on which no picture is received.
Turn the contrast control to the mid-position of its range.
Turn the AGC control to maximum clockwise.
Connect a VTVM between the plate (pin 6) of 12AU7 and chassis (V13).
Adjust the AGC control until the VTVM reads negative .1 volt. Note: On some receivers the closest approach to this reading will be at the fully clockwise position. With the AGC control set as above, turn the contrast control to 7/8 clockwise and tune in the strongest station in the area.
Read the AGC voltage on the VTVM. If the reading is less than negative 2 volts leave the control as set.
If the AGC voltage is more than negative 2 volts slowly turn the control counter-clockwise while observing the picture.
The picture will get darker and finally start to fall out of sync. as evidenced by a sudden shift or jittering in the picture.
Back off (clockwise) slowly until the instability is removed, and then slightly farther.

FIG.5

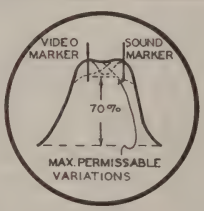
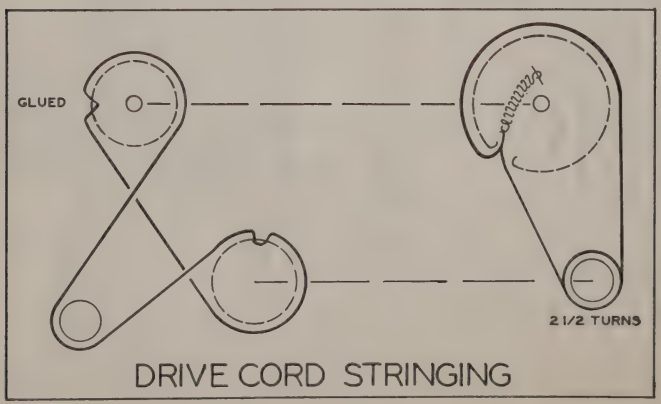


FIG.6



DRIVE CORD STRINGING

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	-.2VDC	0V	0V	6.3VAC	120VDC	90VDC	0V		
V 2	6J6	65VDC	85VDC	6.3VAC	0V	-2.5VDC	§-4.9VDC	0V		
V 3	6CB6	0V	.7VDC	0V	6.3VAC	85VDC	85VDC	0V		
V 4	6CB6	0V	.8VDC	0V	6.3VAC	90VDC	90VDC	0V		
V 5	6BC5	0V	1.3VDC	0V	6.3VAC	112VDC	112VDC	1.3VDC		
V 6	6AL5	#0V	-.4VDC	6.3VAC	0V	0V	#0V	#-.4VDC		
V 7	6BF5	#-.3VDC	#0V	#6.3VAC	#0V	#105VDC #50VDC	#35VDC #15VDC	#-.3VDC		
V 8	6AU6	0V	0V	0V	6.3VAC	105VDC	105VDC	1VDC		
V 9	6AU6	0V	0V	6.3VAC	0V	60VDC	60VDC	1.1VDC		
V 10	6T8	#-.8VDC	#-11VDC	#-.8VDC	#0V	#6.3VAC	#.2VDC	#.2VDC	#-.4VDC	#65VDC
V 11	6V6GT	0V	#0V	205VDC	#230VDC	#0V	#210VDC	#6.3VAC	#12VDC	
V 12	12AX7	#125VDC	#-1.8VDC	#0V	#0V	#0V	#250VDC	#60VDC	#60VDC	#6.3VAC
V 13	12AU7	#130VDC	#-1.3VDC	#0V	#6.3VAC	#6.3VAC	#130VDC	#15VDC #45VDC	#70VDC	#0V
V 14	6BL7GT	#-85VDC #-70VDC	#200VDC #155VDC	#0V	#0V	#410VDC #320VDC	#30VDC #15VDC	#0V	#6.3VAC	
V 15	6AL5	#0V	#-30VDC	#1VAC	#6.3VAC	#0V	#0V	#-30VDC		
V 16	6AU6	#0V	#4.2VDC	#0V	#6.3VAC	#130VDC	#130VDC	#4.2VDC		
V 17	12AU7	#75VDC	#-25VDC	#0V	#6.3VAC	#6.3VAC	#250VDC	#-18VDC	#.1VDC	#0V
V 18	6BQ6GT	#165VDC	#0V	0V	#165VDC	#-10VDC #0V	#-10VDC #0V	#6.3VAC	#25VDC	TOP CAP *
V 19	6W4GT	#-10VDC #0V	0V	#400VDC	0V	#250VDC	#165VDC #50VDC	#400VDC	#400VDC	
V 20	5642	* DO NOT MEASURE								
V 21	5642	* DO NOT MEASURE								
V 22	5U4G	0V	#265VDC	0V	#255VAC	0V	#255VAC	0V	#265VAC	
V 23	5U4G	0V	#265VDC	#110VDC #55VDC	#255VAC	0V	#255VAC	#0V	#265VAC	
V 24	16AP4	5.3VAC	0V	PIN 10 #370VDC	PIN 11 #105VDC	PIN 12 0V				

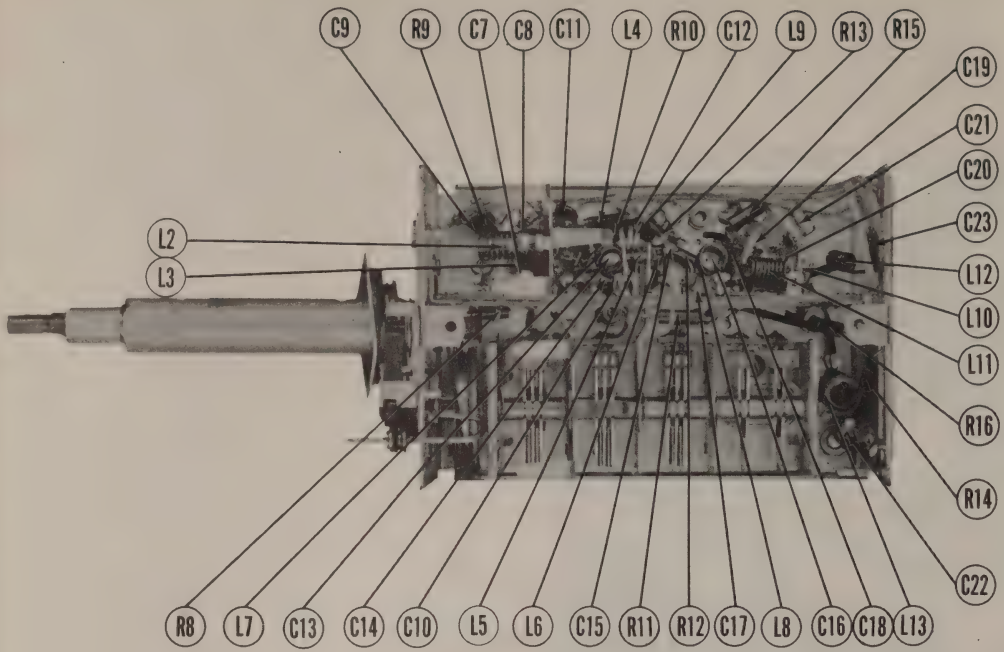
§ TAKEN WITH VACUUM TUBE VOLTMETER
# MEASURED FROM -130VDC POINT
* DO NOT MEASURE

RESISTANCE READINGS

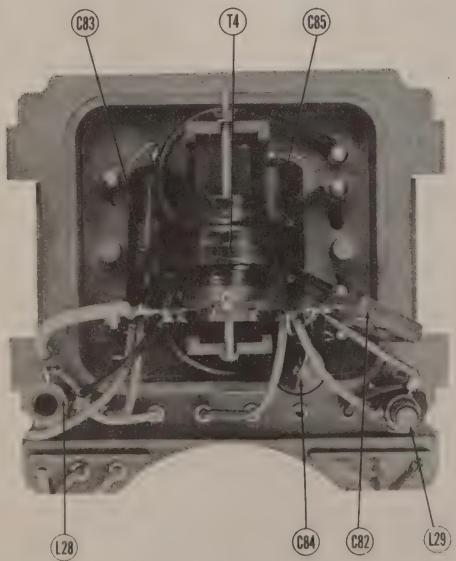
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	120KΩ	0Ω	0Ω	.1Ω	†40Ω	†6.8KΩ	0Ω		
V 2	6J6	†10KΩ	†10KΩ	.1Ω	0Ω	110KΩ	22KΩ	0Ω		
V 3	6CB6	18KΩ	56Ω	0Ω	.1Ω	†2.2KΩ	†2.2KΩ	0Ω		
V 4	6CB6	11KΩ	56Ω	0Ω	.1Ω	†2.2KΩ	†2.2KΩ	0Ω		
V 5	6BC5	.7Ω	180Ω	0Ω	.1Ω	†1KΩ	†1KΩ	180Ω		
V 6	6AL5	#100Ω	115KΩ	.1Ω	0Ω	0Ω	#100Ω	#4KΩ		
V 7	6BF5	#4KΩ	#0Ω	#.1Ω	#0Ω	†7KΩ	#180Ω	#4KΩ		
V 8	6AU6	47KΩ	0Ω	0Ω	.1Ω	†1KΩ	†1KΩ	100Ω		
V 9	6AU6	47KΩ	0Ω	.1Ω	0Ω	†22KΩ	†22KΩ	330Ω		
V 10	6T8	Inf.	#68KΩ	Inf.	#0Ω	#.1Ω	#470Ω	#470Ω	#15Meg	220KΩ
V 11	6V6GT	Inf.	#0Ω	†1.1KΩ	†510Ω	#470KΩ	†1KΩ	#.1Ω	#270Ω	
V 12	12AX7	12KΩ	#1Meg	#0Ω	#0Ω	#0Ω	†33KΩ	14KΩ	#1.1Meg	#.1Ω
V 13	12AU7	†10KΩ	1.2Meg	#0Ω	#.1Ω	#.1Ω	10KΩ	#560KΩ #1Meg	2KΩ	#0Ω
V 14	6BL7GT	#1.2Meg #2.2Meg	▲570KΩ	#0Ω	#1Meg #2Meg	▲2KΩ	#5.7KΩ #680Ω	#0Ω	#.1Ω	
V 15	6AL5	#0Ω	#1.1Meg	#2.2Ω	#.1Ω	#200KΩ	#0Ω	#1.1Meg		
V 16	6AU6	#680KΩ	#180Ω	#0Ω	#.1Ω	39Ω	0Ω	#180Ω		
V 17	12AU7	†33KΩ †280KΩ	#150KΩ	#0Ω	#.1Ω	#.1Ω	†80Ω	#470KΩ	#10Ω	#0Ω
V 18	6BQ6GT	†8.2KΩ	#0Ω	Inf.	†8.3KΩ	#470KΩ	#470KΩ	#.1Ω	#270Ω	TOP CAP ▲ 40Ω
V 19	6W4GT	#470KΩ	Inf.	120KΩ	Inf.	†41Ω	†38KΩ †290KΩ	▲.4Ω	▲0Ω	
V 20	5642	ALL CONNECTIONS INFINITE RESISTANCE EXCEPT PLATE ▲ 134Ω								
V 21	5642	ALL CONNECTIONS INFINITE RESISTANCE								
V 22	5U4G	Inf.	3KΩ	Inf.	1.5KΩ	Inf.	1.5KΩ	Inf.	3KΩ	
V 23	5U4G	Inf.	3KΩ	#1.1Meg	1.5KΩ	Inf.	1.5KΩ	#0Ω	3KΩ	
V 24	16AP4	.1Ω	470KΩ	PIN 10 ▲ 35Ω	PIN 11 180KΩ	PIN 12 0Ω				

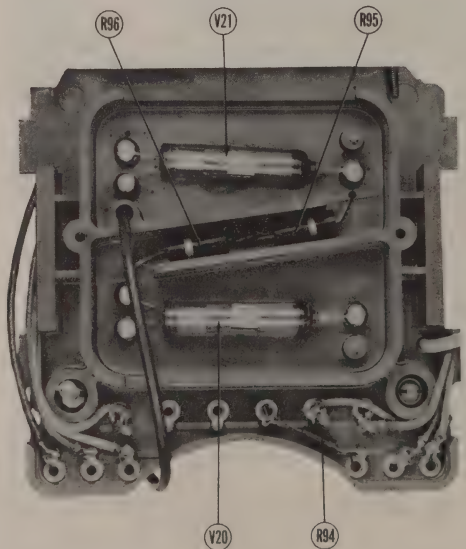
▲ MEASURED FROM PIN 3 OF V 19
† MEASURED FROM PIN 8 OF V23.
# MEASURED FROM -130VDC POINT.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.

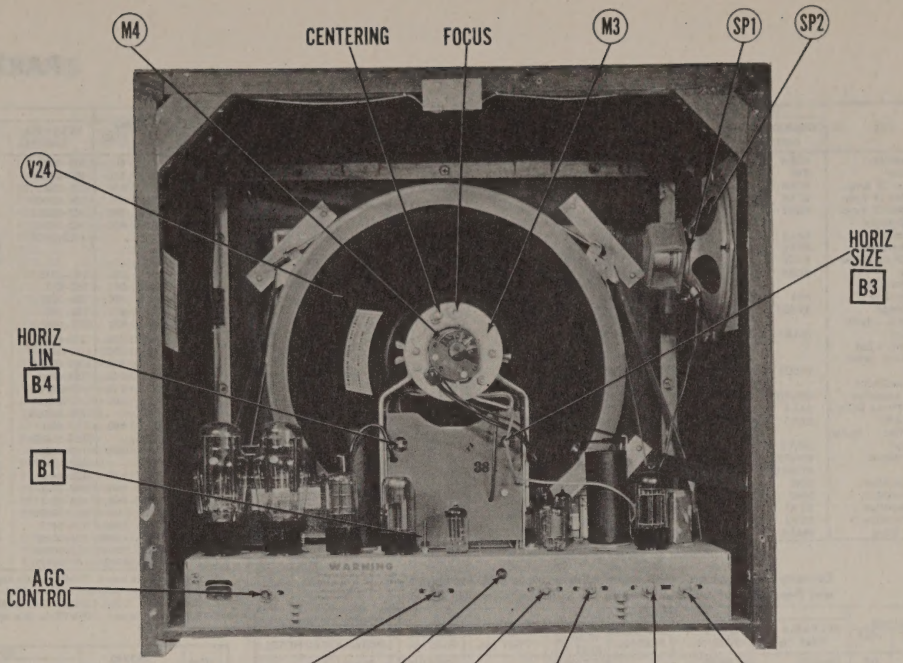


RF TUNER





HIGH VOLTAGE SUPPLY



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

CHECK OF HORIZONTAL OSCILLATOR

Turn the set on and tune in a TV station, preferably a test pattern, and if necessary turn the horizontal and vertical hold controls to synchronize the picture.
Check to see that the horizontal drive control is properly set, (clockwise as far as possible without crowding the center of the picture).
Turn the tuning control to an unused channel and back again. The picture should fall into sync.
Switch the receiver off for about 5 minutes. When set is turned on again the picture should fall into synchronization.
Increase the brightness and decrease the contrast until the normally blanked edges of the raster are visable. There should be 1/8 inch of blanking signal on the right side of the raster.
If the receiver passes the above checks no horizontal oscillator alignment is needed.

HORIZONTAL OSCILLATOR ALIGNMENT

Turn the core of the "ringing" coil slug (B1) fully out (counter-clockwise).
Short the horizontal peaking resistor R86.
Turn the horizontal drive control to maximum counter-clockwise and then slowly clockwise until crowding is noticed in the picture, if crowding cannot be obtained leave control at maximum clockwise.
Remove the horizontal discriminator tube (V15) from its socket.
Carefully turn the horizontal hold adjustment until the picture moves back and forth with the blanking bar vertical.
Replace V15 in its socket.
Increase the brightness and decrease the contrast until the normally blanked edges of the raster are visable.
Adjust the horizontal phasing slug (B2) until 1/8 inch of blanking appears on the right side of the picture.
Remove the short from R86 and readjust the horizontal drive control as outlined above.
Adjust the "ringing" coil slug (B1) until 1/8 inch of blanking again appears on the right hand edge of the raster.

HORIZONTAL WIDTH AND LINEARITY ADJUSTMENTS

Adjust the horizontal size slug (B3) until the picture fills the mask horizontally.
Adjust the horizontal linearity slug (B4) until the picture is symmetrical from left to right.
Slight retouch of the horizontal drive control may be required for optiumum results.

DISASSEMBLY INSTRUCTIONS

1. Remove five push-on type control knobs.
2. Remove five wood screws from rear cover. Remove rear cover.
3. Disconnect built-in antenna.
4. Remove antenna terminal strip.
5. Disconnect speaker.
6. Remove six 5/16" hex head bolts from chassis. Remove chassis.
7. Remove two 5/16" hex nuts from speaker. Remove speaker.

NOTE: FOR PICTURE TUBE REMOVAL, IT IS NECESSARY TO REMOVE THE CHASSIS AS OUTLINED ABOVE.

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	SYLVANIA PART No.	JENSEN PART No.	QUAM PART No.	
SP1	PM	3.9Ω	539-0502	ST-108 Mod. P6-X	6A15	
	CONE DIA.	V. C. DIA.				
SP2	6"	9/16"				

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	SYLVANIA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.300A	41Ω	1.2 Henries	145-0004	C-2326 ①	C-2996 ①	TR-3300①	① Drill new mounting hole.

COILS (RF-IF)

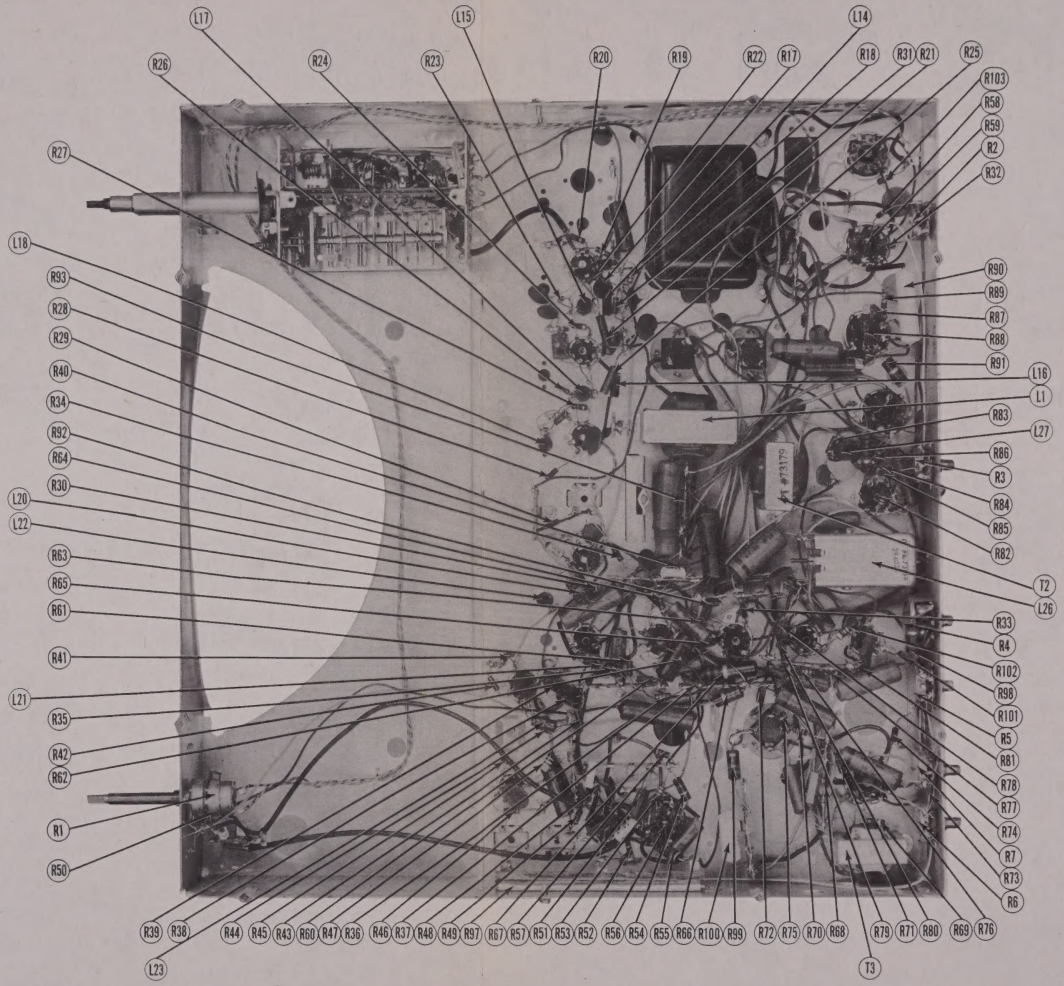
ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	SYLVANIA PART No.	MEISSNER PART No.	
L2	Ant. Trans.	.2Ω	0Ω			Part of Tuner Part # 323-0005
L3	Ant. Coil	0Ω				
L4	RF Choke	.1Ω				
L5	RF Coil Primary	0Ω				High-Band (Part of Tuner Part # 323-0005)
L6	RF Coil Secondary	0Ω				High -Band (Part of Tuner Part # 323-0005)
L7	RF Coil Primary	0Ω				Low - Band (Part of Tuner Part # 323-0005)
L8	RF Coil Secondary	0Ω				Low- Band (Part of Tuner Part # 323-0005)
L9	RF Coupling Coil	0Ω				Low-Band (Part of Tuner Part # 323-0005)
L10	Osc. Coil	0Ω				High-Band (Part of Tuner Part # 323-0005)
L11	Osc. Coil	0Ω				Low-Band (Part of Tuner Part # 323-0005)
L12	Fil. Choke	0Ω				Part of Tuner Part # 323-0005
L13	1st Video IF	1.2Ω				Part of Tuner Part # 323-0005
L14	Fil. Choke	0Ω		147-0014		
L15	2nd Video IF	.7Ω	.7Ω	125-0002		
L16	Fil. Choke	0Ω		147-0014		
L17	3rd Video IF	.7Ω	.7Ω	125-0002		
L18	Adj. Channel Sound Trap	.3Ω		118-0007		
L19	4th Video IF	.6Ω	1.2Ω	120-0002		
L20A	Peaking	7Ω		131-2004		Dual Coil-Includes L20B
B	Peaking	8Ω				Dual Coil-Includes L20A
L21A	Peaking	5.5Ω		131-2003		Dual Coil-Includes L21B
B	Peaking	8Ω				Dual Coil-Includes L21A
L22	1st Sound IF	6.5Ω		130-0001		
L23	2nd Sound IF	3.9Ω		146-0012		
L24	Ratio Det. Trans. Pri.	2.7Ω		128-0004		
L25	Ratio Det. Trans. Sec.	3.5Ω		128-0005		Tap at 1.5Ω
L26	Horiz. Phase Disc. Trans	83Ω	39Ω	128-0006		
L27	Horiz. Osc. Coil	38Ω		146-0005		
L28	Horiz. Lin.	7.5Ω		133-0001		Tap at 3.2Ω
L29	Horiz. Size	41Ω		132-0001		

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			SYLVANIA PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M1	3AG	.250	191-0005	487-0008	312.250	357001	

MISCELLANEOUS

ITEM No.	PART NAME	SYLVANIA PART No.	NOTES
M2	RF Tuner	323-0005	
M3	Focus Magnet	400-0007	
M4	Ion Trap	400-0006	
	Safety Glass	710-0006	
	Knob	744-0013	Outer Dual
	Knob	740-0011	Inner Dual
	Knob	743-0004	High-Low Band Change
	Pointer	792-0004	Dial



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION